FIELD BOOK

740

TABLE FOR REDUCING PERCHES TO FEET AND INCHES.

PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.
1	16 6 in.	21	3.46 6 in.	41	6.76.6 in.	61	10.06.6 in.	81	13.36.6 in.
2	33.0	22	3 63.0	42	6.93.0	62	10.23.0	82	13.53 0
3	49.6	23	3.79.6	43	7.09 6	63	10.39.6	83	13.69.6
4	66.0	24	3.96.0	44	7 26.0	64	10.56.0	84	13.86.0
5	82.6	25	4 12.6	45	7 42.6	65	10.72.6	85	14.02.6
6	99.0	26	4.29.0	46	7.59.0	66	10.89.0	86	14.19.0
7	1.15.6	27	4.45.6	47	7.75.6	67	11.05.6	87	14.35.6
8	1.32.0	28	4.62.0	48	7.92.0	68	11.22.0	88	14.52.0
9	1.48.6	29	4.78.6	49	8.08.6	69	11.38.6	89	14.68.6
10	1.65.0	30	4.95.0	50	8.25.0	70	11.55.0	90	14.85.0
11	1.81.6	31	5 11.6	51	8.41.6	71	11.71.6	91	15.01.6
12	1.98 0	32	5.28 0	52	8.58.0	72	11.88.0	92	15.18.0
13	2.14.6	33	5.44.6	53	8.74.6	73	12.04 6	93	15 34.6
14	2.31.0	34	5.61.0	54	8.91.0	74	12.21.0	94	15.51.0
15	2.47.6	35	5.77.6	55	9.07 6	75	12.37.6	95	15.67.6
16	2.64.0	36	5.94.0	56	9.24.0	76	12.54.0	96	15.84.0
17	2.80.6	37	6.10.6	57	9.40.6	77	12.70.6	97	16.00.6
18	2.97.0	38	6.27.0	58	9.57.0	78	12.87.0	98	16.17.0
19	3.13.6	39	6.43.6	59	9.73.6	79	13.03.6	99	16.33.6
20	3.30.0	40	6.60.0	60	9.90.0	80	13.20.0	100	16.50.0

B. K. ELLIOTT COMPANY, PITTSBURG, PA.
DRAWING MATERIALS AND SURVEYING INSTRUMENTS

133

Also known as
Bell Street
Ohio
(over)

Rules for Road
Bridge
to Surveyor
Chardon O

PL
GEAU

TABLE FOR REDUCING PERCHES TO FEET AND INCHES.

PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.	PERCH.	FEET.
1	16 6 in.	21	346 in.	41	676 in.	61	1006 in.	81	1336 in.

BELL STREET & 7-23
" " LEVELS 35
SNYDER T.H. 192 Pg 71

Silver Creek Bridge on
Bell St 1951
24-
McFarlane Creek Bridge.
Bell St Pg 13

Survey of a Road beginning on the east line of Russell Twp, where the east & west road in Newbury which passes between Apollas Hewitt and John Bachelor's land terminates, thence running S. 60° W, 6 ch. 75 lk; thence S 88° 30' W on the north line of lots No 1, 5, 9, & 16 Tract no 3, Russell twp, 3 miles, 56 ch. 75 lk; thence N. 77° W, 12 ch. 50 lk; thence S. 88° W, 30 ch 15 lk thence No. 71° W, 18 ch 25 lk; thence S 73° W, 6 ch. 25 lk. to the state rd leading from Parkman to Cleveland near the falls of Chagnn River.

Surveyed Feb 23, 1830

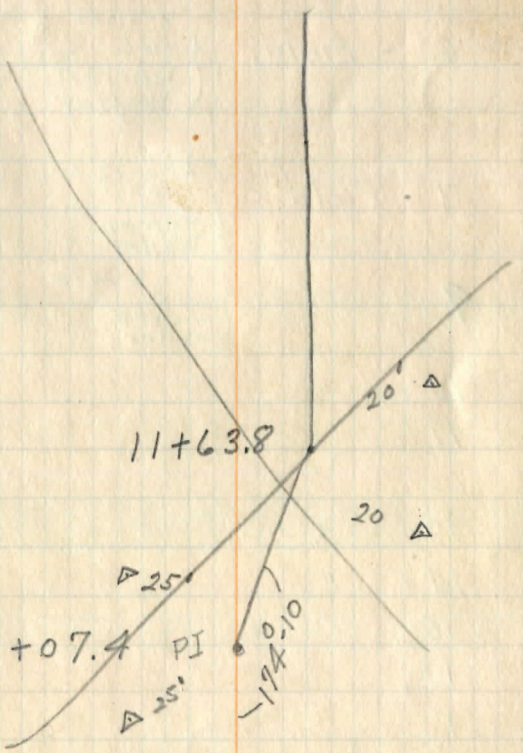
Geo. E. White - Surveyor.

60' wide.

Elmer Waller
geo Warren

Sta		d	
+21.4	PT.	6 - 20'-30"	
13+00		5 - 55	
+50		4 - 55	
12+00		3 - 55	
+50		2 - 55	
11+00		1 - 55	
+50		0 - 56'	
+04.3	PC.	4° L.	I = 12° 41'
			T = 159.2'
			L = 317.1
10+0			
9+0			
8+0			
7+0			
6+0			
5+0			
+80	P		C.H. Gifford 13A.
+50	PL	Right	
0+80	P.L	Left	Emma F. Sheffield
+04.5	PT	2 - 55	
4+0		2 - 51	
+50		2 - 06	
3+0		1 - 21	
+50'		0 - 36'	
+10.1	PC	3° R	T = 97.3
2			I = 5° - 50' - L = 194.4
1			
0+00			

80 X 202



℄
20' Par.

TWP LINE

May 2	- Office.	
" 3	- " - Fed. aid No 206	
4	- " - assessment map Soules Cor. Rd.	
5	- Field { mcc, F. Graw. exp. 1.10, Geo. Warren - 8 hr.	Mrs. W. A. Smith - supper, bed.
6	- Field. { 7:30 AM to 6 PM, McC, warren, Waller.	3 meals, bed.
7	- Field. { 7:30 - 12 AM, McC, Warren, Waller	2 meals.
9	- " { 8:00 - 6-20 PM, McC, Warren, Waller	2 m - bed.
10	"	3 m - b.
11	"	3 m - b
12	"	"
13	"	"
14	"	2 meals.
16	"	2 " + bed (missed breakfast)
17		3 + b
18		3
19		3 + b
20		3 + b
21		2

May	23	3 m + b
	24	"
	25	3 m.
	26	3 m + b
	27	"
	28	3 m
	31	3 m.

Summary.

L. G. McClellan	23 days @ $7.00	= $161.00
G. A. Warren	@ $4.00	=
Elmer Waller	@ $4.00	=

May 5, 1921 - Clear.

McClellan
Graw
Geo. Warren

Soules Corners Rd.

May 6, 1921 - Clear.

McClellan
Warren
Waller

May 7, 1921 - Clear.

McClellan
Warren 1/2 day
Waller 1/2 day

Locating ℄.

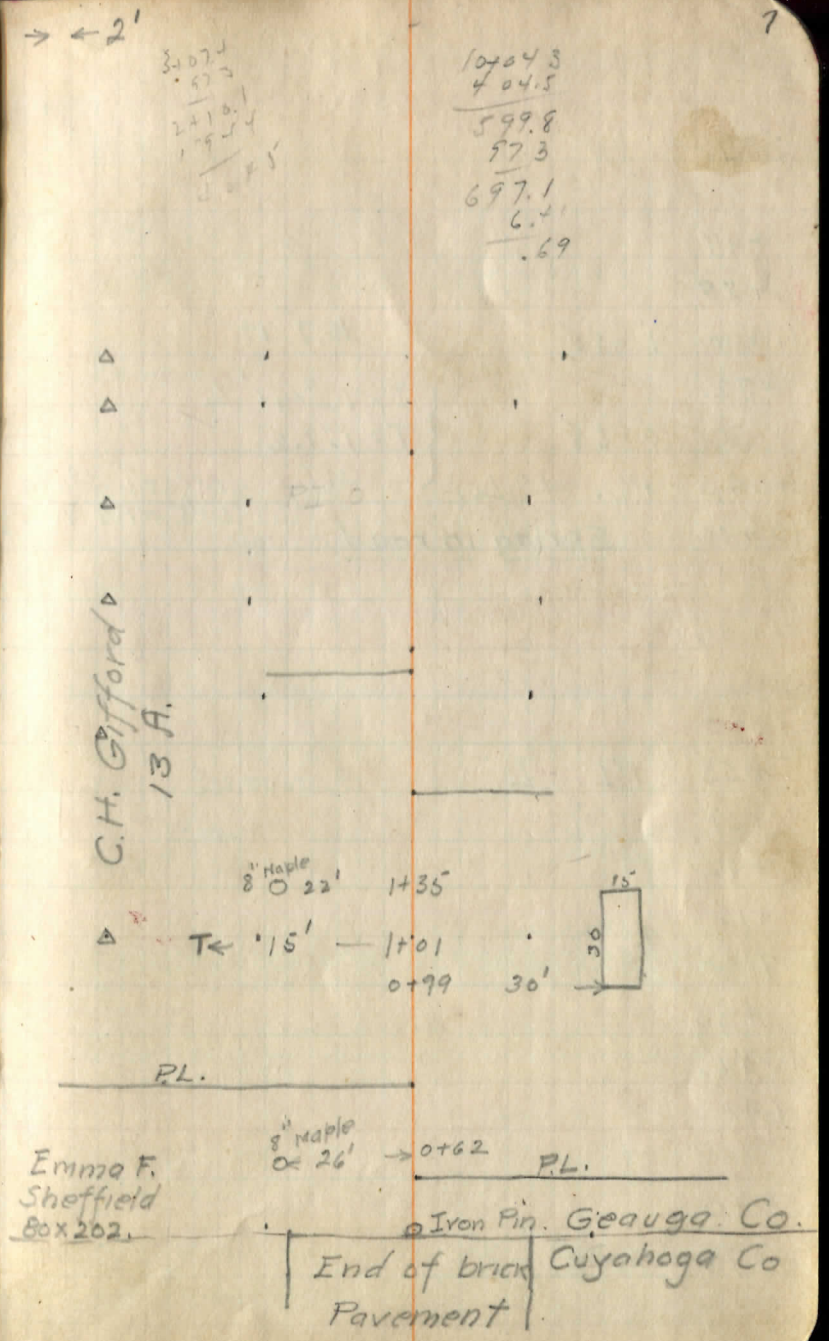
BELL ST. S. RUSSELL

May 9, 1921 - Clear.

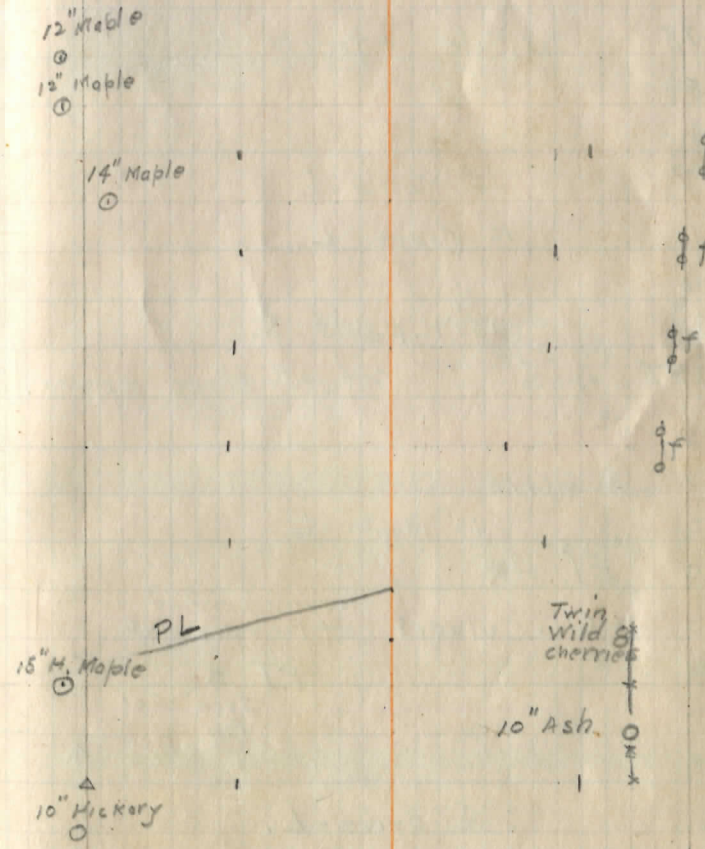
{ McClellan
Warren
Waller.

Sta.		
4+04.5 PT	2-55	
4+00	2-51	
+50	2°-06'	
+42		12"x18" Stone box culvert. (20')
3+00	1°-21'	
+94		10" Pipe 20'
+50	0-36'	{ T = 97.3 I = 5°-50' R L = 194.4
+10.1	P.C. 3° R	
+05	℄ drive L.	
2+00		
+70	℄ Drive R.	
1+00		
+80	P.L.-L.	
+50	PL-R.	
0+00.		

Note - All offset stakes set 25' North of ℄ unless otherwise specified.



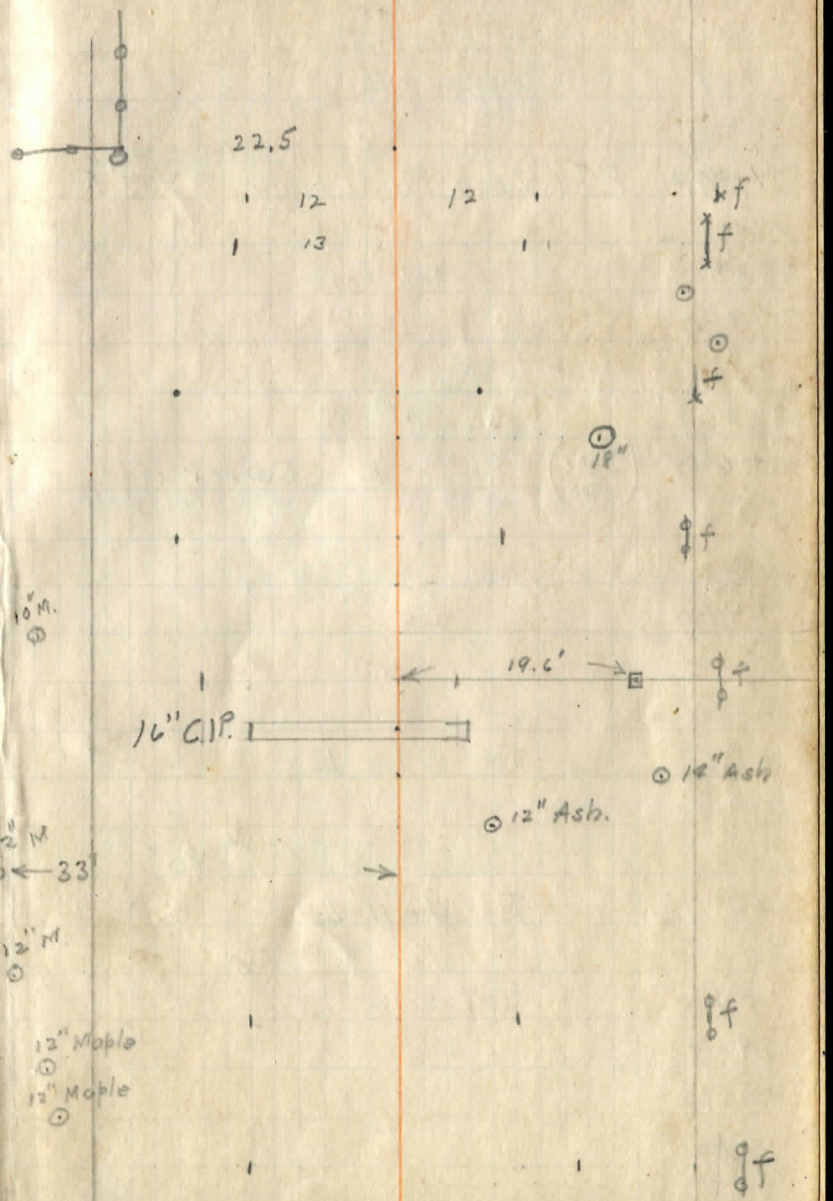
Sta.			
+47			
+29			
11+00	1°-55'	167° 19	
+72		I = 12°-41' L	
+50	0°-55'	T = 159.2	
+043	P.C. 4° L.	L = 317.1	offset stake set with π.
10+00	Spring in road		
9+00			
8+00			
+53	P.L. - L.	⊞ Stone set	
+39			
+16			
+15			
7+00			
+82			
+45			
6+00			
5+0			
4+96	P.L. - R		



May 10, 1921 - Clear, warm.

{McClellan
{Warren
{Waller

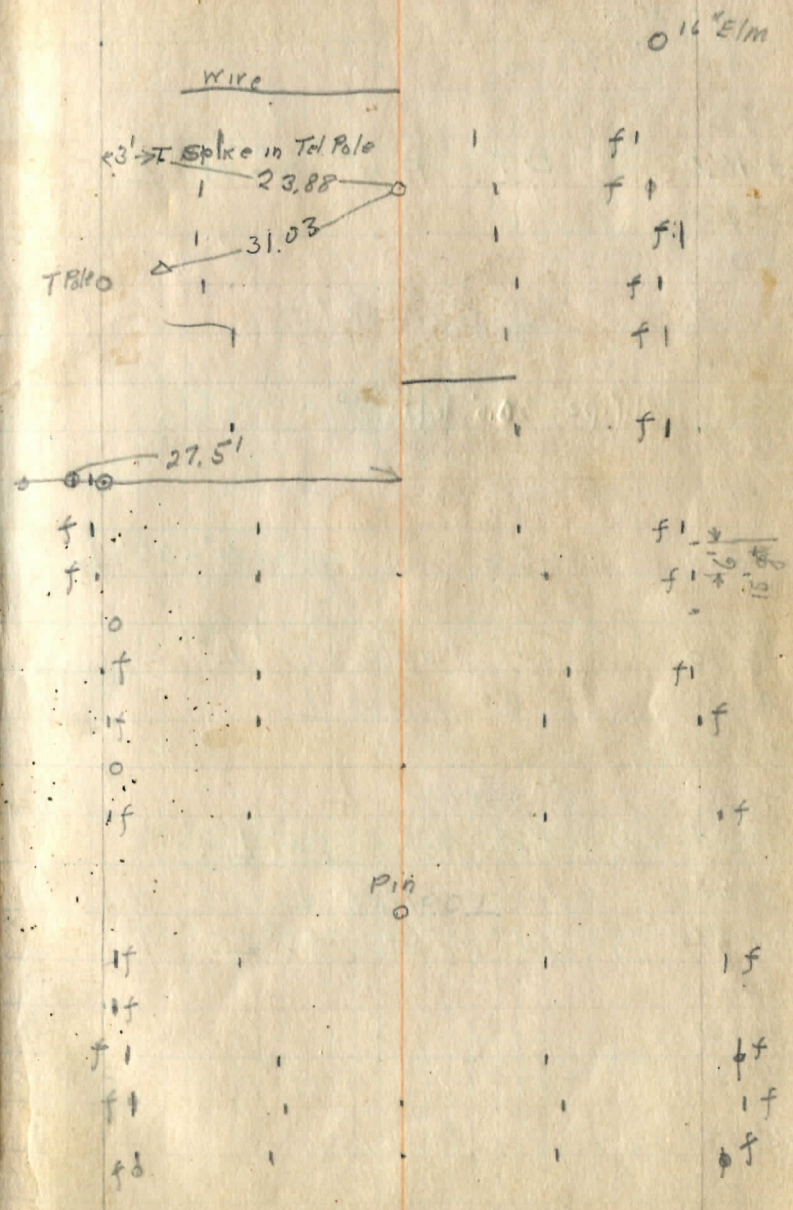
Sta.		
+628	Tel. Pole + fence L.	
16+00		
15+00		
+97	12" Maple L	
+50	12" Maple L.	
14+00		
+58	18" H. Maple R.	
+21.4 P.T.	6°-20'-30"	Offset stake approx.
13+00	5°-55'	
+88	℄ Drive R.	
+80	10" Maple - L	
+50	4°-55' P.L. - R	
+43	16" CIP. Culvert {Never carried off the water 20'	
+38	P.I. Iron Pin 20'	
+29		
+23		
+16	℄ drive - L.	
+06		
12+00	3°-55'	
+85		
+67		
11+50	2°-55' 4° L	



54 16" Elm - R.
+41 fence L

31+00
30+12
29+99.2 P.I. Iron Pin. Angle 0°-33' R
29+00
28+00 Tel. Pole
27+00
+93 PL R.
26+00
+60.5 (Stone Mon) P.L. - L Corner of fence also Tel pole
25
24
+49
23+00
22+00
+45 Tel Pole L.
21+00

20+96.5 P.I. 0-11' L
20+00
+52 Tel Pole L
19+00
18+00
17+00



May 11, 1921.

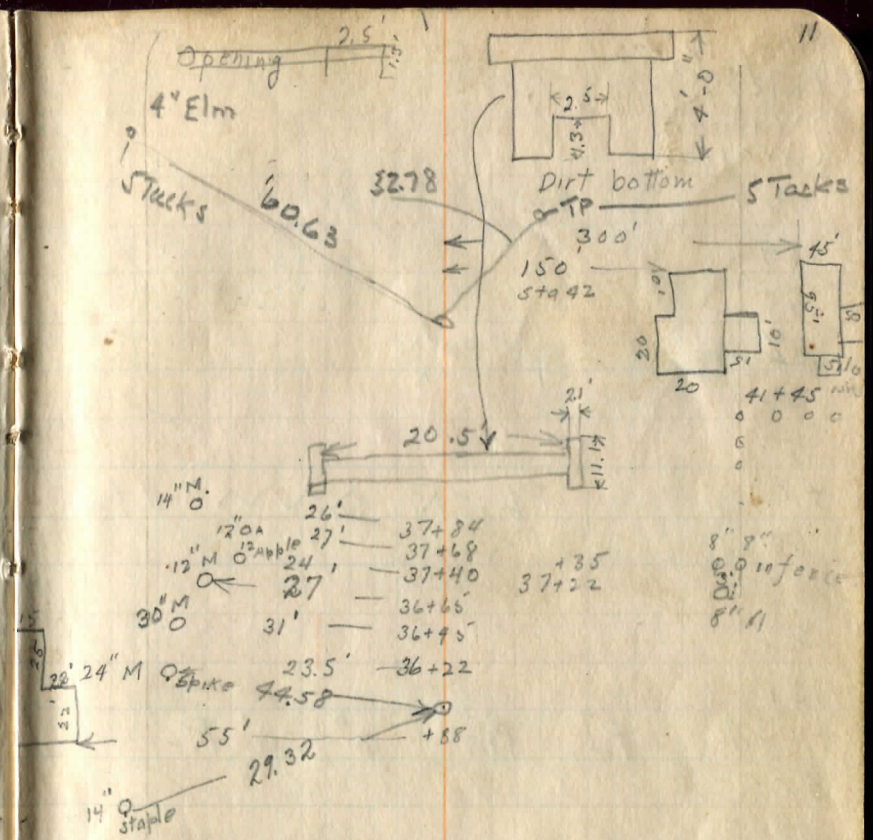
{ McClellan
Warren
Waller

4116
3583
5325

+16.0

42
+16.0 P.I. Pin 0°-19' L
41
40
+55.3 ℄ Culvert
39
38 I.P. pipe 30.0' left
37
36
+83.5 PI - Iron Pin. 0°-36' L

+70 14" Maple 27' L
+65 ℄ drive L.
35+00
+81 ℄ drive L.
+20 Tel. Pole 23' L.
+67 Fence corner L.
+71 14" Maple 25' L.
34+00
33+00
+22 Tel. Pole - 35' L
32+00



May 12, 1921 Clear - warm.

{McClellan
{Warren
{Waller

+98.7 crack board on culvert opp. X X

59

58

57 +88 +74

O 14" Elm - R.
T -R.

56

55

+02.0 PL. - R. ~~~ Rail fence

54

53

52

51

+03.4 PI. Pin 0°-20' R

50

49

48

47

46

+49 P.L. - L.

+43.0 PI Pin 0°-39' R.

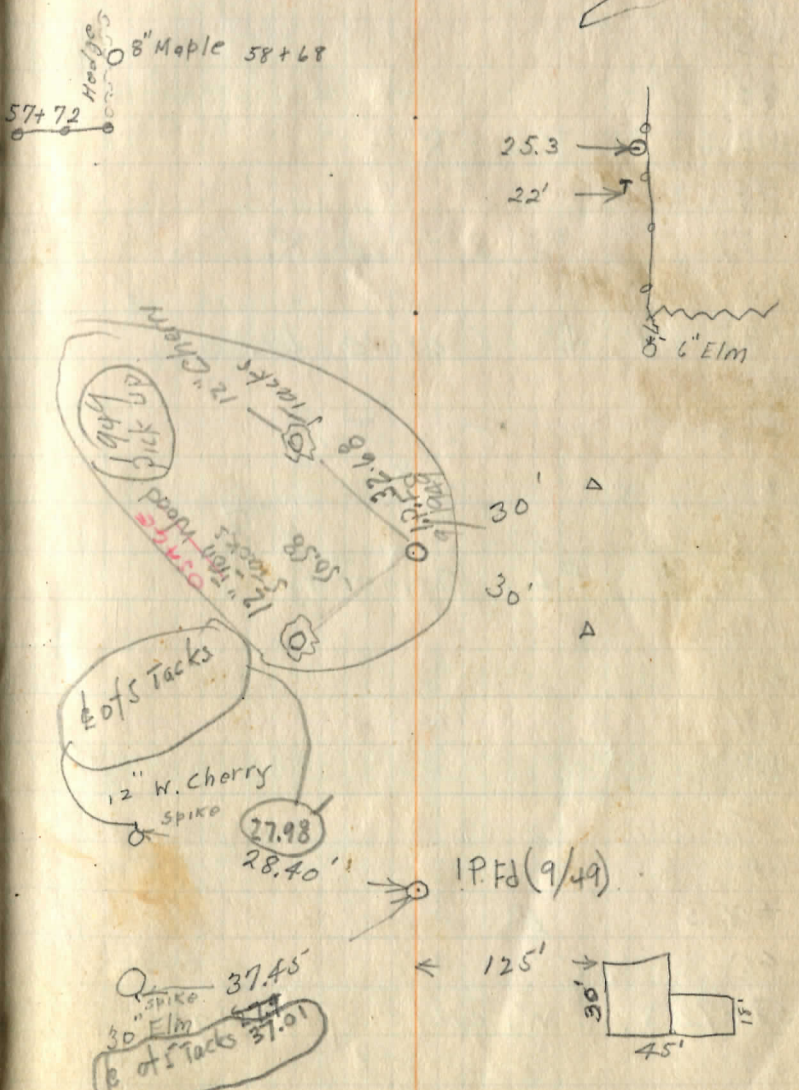
45

44

43 +55

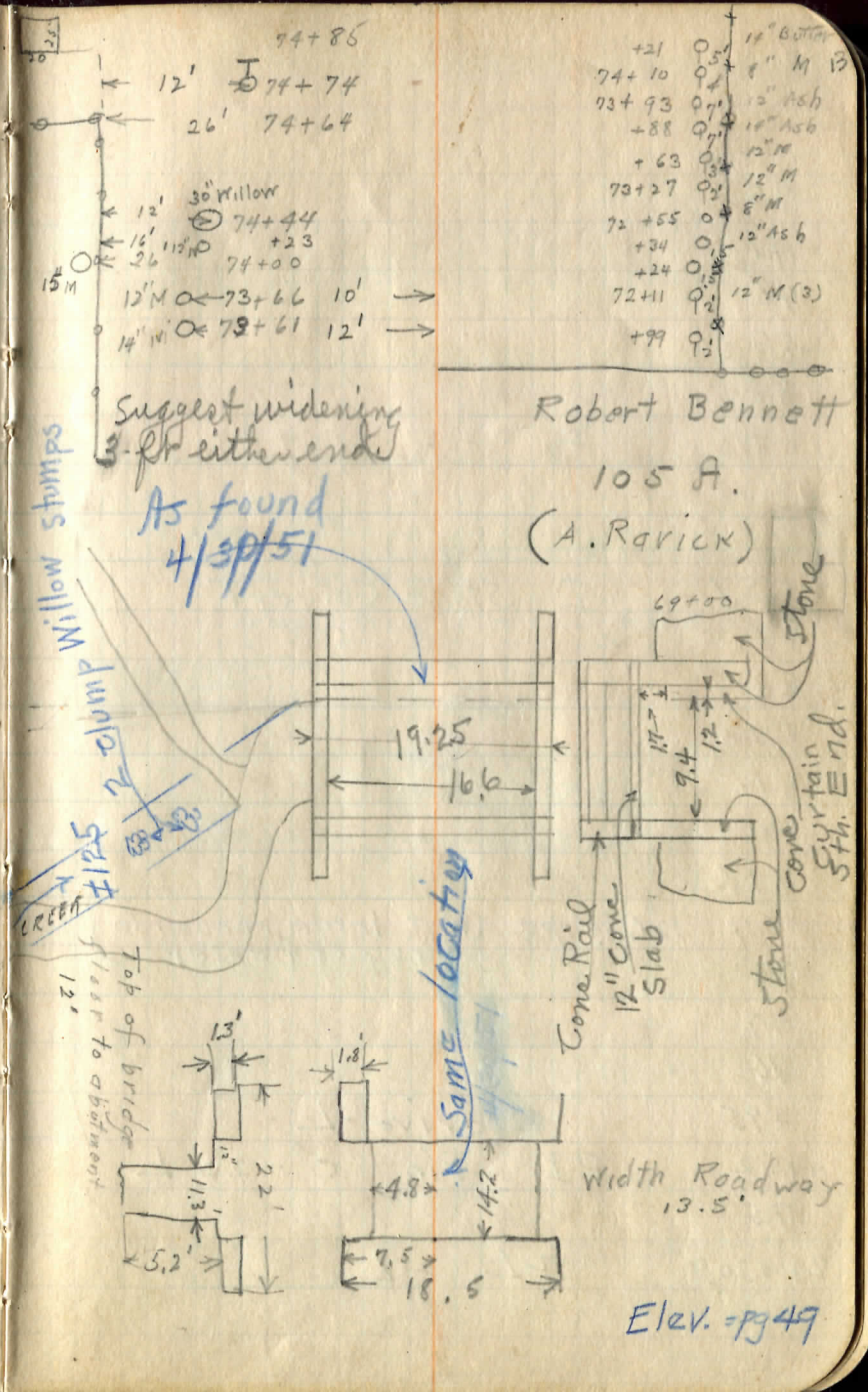
42+35 ℄ 10' drive R.

1

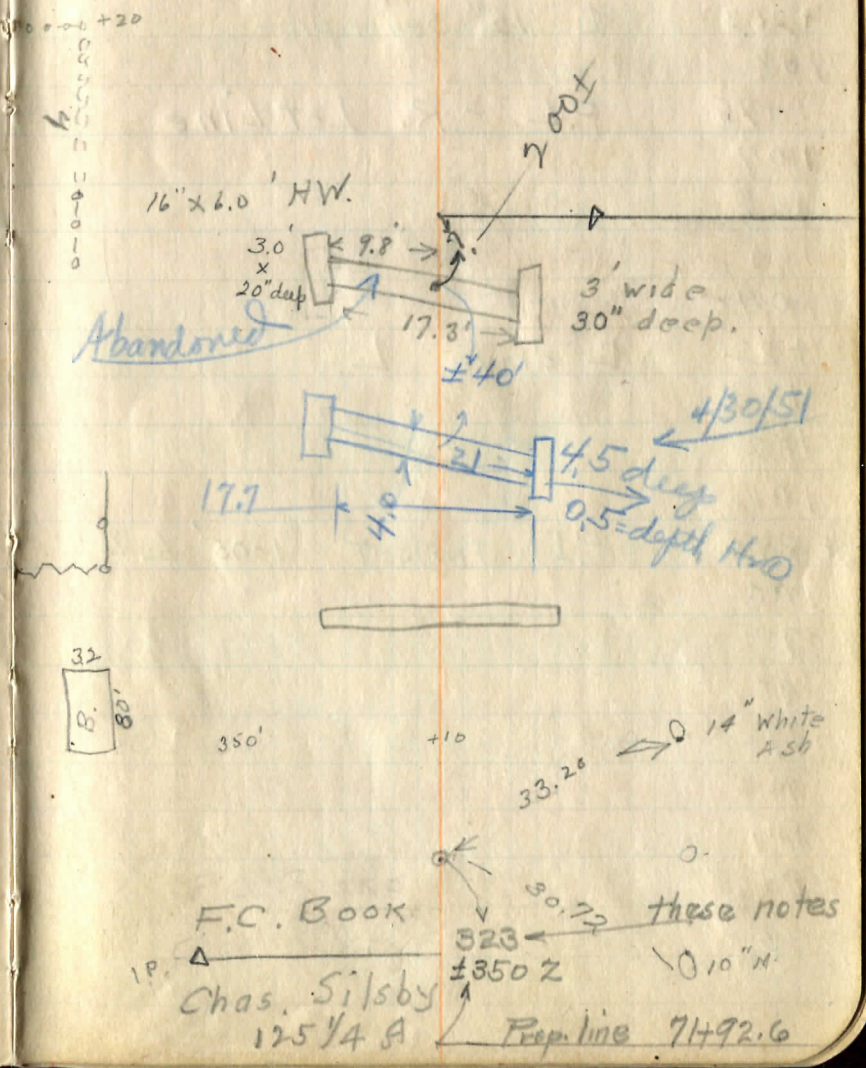


Books 0 - 20 L

+	
74	
73	
72	
+92.6	PL - R -
71	
+57	℄ 8' drive R.
70	
+62	℄ 8' drive L.
69	
+15	PL. Cemetery
68	
67	
+80	PL. Cemetery
66	
65	
64	
63	
62	
61	
+06.5	E. edge.
60	
59+92.3	W. edge of bridge



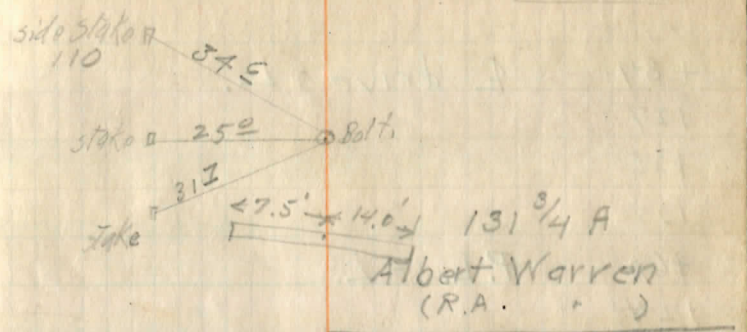
92
91
90
89
88
87
86
85
+15.7 ℄ Stone Culvert
84
83
82
81
80
79
+07 12" CI. Pipe (Not large enough to carry off water)
78
77
76
+95 ℄ drive - L
+15.2 P.I - Pin 0° - 20 L.
75
74+20.8 PL. - L



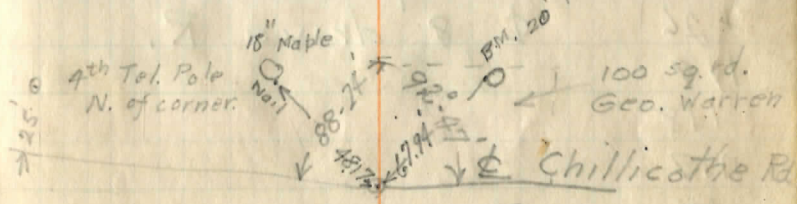
May 13, 1921 Cloudy - rain 2 hrs.
McClellan
Warren
Waller

+76.4 P.I Pin set. 0°-42'-30" R.
109
+26.3 ℄ 12" Sewer pipe
108
+75 P.L. - R. Lot Line
107
106
105
104
+82 ℄ drive L.
103
102
101
+89.6 P.I. Pin set 1°-05' L
100
99
98
97
96
95
94
93

92-47
74-17-30
42 30



Albert Wilber



109+76.4
100 89.6
886.8

127 + 76.6 P.I.

+87 ℄ drive - L.
127
126
125
+60 P.L. - L.
124
123
122
121
+13.5 ℄ 10" iron pipe
120
+26 ℄ 8' drive R.
119
118
117
116
115
114
113
112
111
110

Gene Childs

W.A. Smith

May 14, 1921 Clear - warm.

McClellan 1
Warren ½ day
Waller ½ day

141

+29 ℄ 8' drive. R.

140

+80 ℄ Comb. stone + 12" sewer pipe

139

138

137

136

+21.0 P.O.L. Pin set.

135

134

+20 ℄ Stone Culvert

133

+60 P.L. - R

132

131

130

+40 ℄ drive L.

129

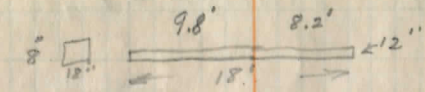
128

127+76.6 P.I. Pin set. 0°-10' L

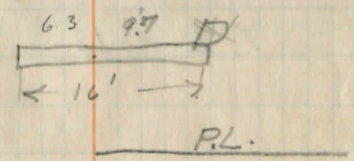
+80 - C.
29 - Adv.
144+02.9

1069
0090

Foot



D.D. Goro



R. A. Warren
131. A.

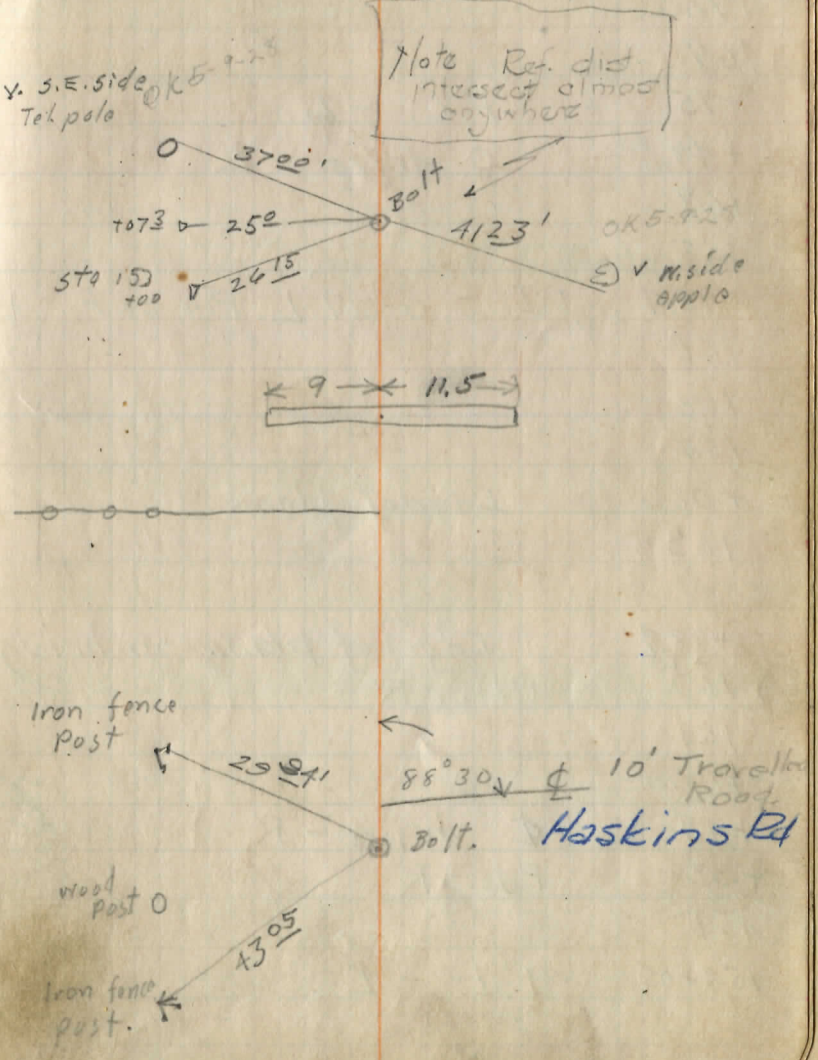
Nail E root
14" Maple
29.57'
P.L. I.P.

Ok
41.45'
Nail W. Side
Cherry

May 16, 21 - Clear - Cool.
McClellan T. 5 hrs. Locating hubs

May 17, '21 - Clear - Cool
McClellan
Warren
Waller

158
157
156
+56 ℄ 8' drive - L
155
154
+07.3 P.I. 0°-33' R
153
152
151
+82.5 ℄ 1¼" Galv Iron Pipe
150
+74 P.L - L
149
148
147
146
145
+33 ℄ Road - R
+02.9 P.I. 0°-28' L. Pin set
144
143
142



Find out when Russell trustees meet. First Monday in month.

172
171
170
169
+75 P.L. - L.
+49 ℄ drive - L
168
167
+93.4 PI - 0° - 27' L. Pin set
166
165
164
+08.6 Edge of plank.
163

+88.8 Edge of plank on bridge
+15
162 P.L. - R
161
160
+49 ℄ drive - R
+33 P.L. - R
159
158+05 P.L. - L

77.8
66.93
10.87

N ←

Dell
Mathews
100 A.

C.F. Green
25'
25'
92.5 A

5.0 ← 9.8 →
14.6' →
4.0

G.B. Prentice
8 A.
PL

Jennie Robinson
PL

D. Gore

David Lukens
20 A.

May 18, 1921 Clear - Warm

McClellan
Warren
Waller

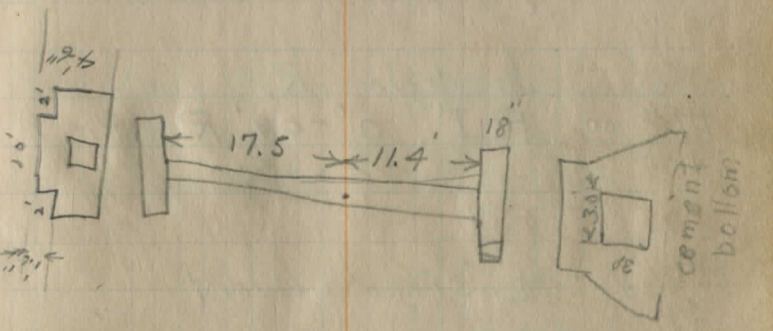
+03 P.L - L
185
184
183
+90? School. PL - R.
182
+69 ℄ 10' Road P.L. - R

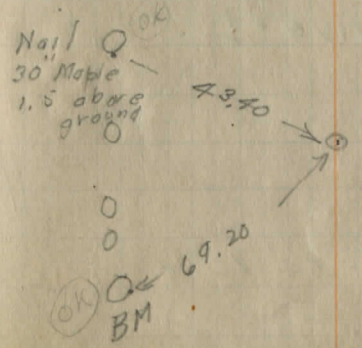
~~+69 ℄ 10' Road - R ℄~~
+15.1 ℄ Stone Culvert
181
180
179
+14 ℄ drive L
178
+18.0 P.I 0° - 42' R - Pin set
177 ℄ drive - R.
176 C.
175
174
173

186+80.9
185+03 PL - L

20

School.
SNYDER
181+69 ~~Road~~





+5.5 P.L. - R.

201
200
+15 ℄ drive - R.
199
198
197
196 +07 P.L. - L
+82 ℄ 12" S.P.
195 +5.0 P.L. - R
194
+34 ℄ drive - R.
193+00 P.I. 0°-09' R.(?) Pin set

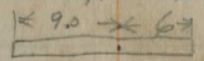
Note: Angle omitted 193 (5-9-38). Note deflection - in present road

192
+35 ℄ stone Culvert
191
+20 ℄ drive - L
190
189
188
187
+80.9 P.I 0°-54' L - Pin set
186

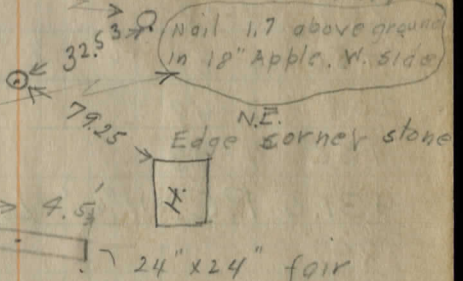
193+00
19200.0
18680
619.1

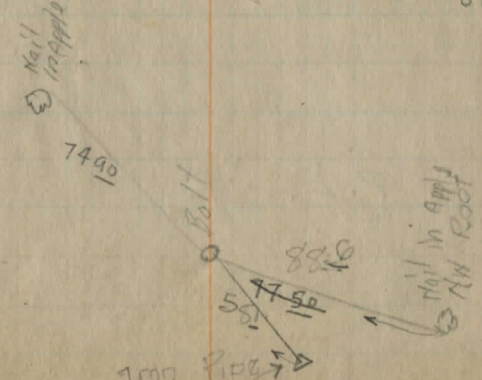
Perry Johnson.
110 A.

Sistig
40 A.



Nail in Stump
Ed. Silvernail
John Clay Est.





208 +65 PI

151-12
28-48

29-31

214+30.75 P.T. 14°45'30"

214 12°-45'
+30 213+50 - 9°30'
+20.0 6°15' PI ⚓ stake set. 29°-31' R
213 212+50 - 3°00'
P.C. +03.7
212
211
210
PT+92.8 14-24
+50 12-03
209 9-18 +95 ℄ drive R
+50 6-33 +60 ℄ " L
208 3-48
+50 1-03 { I = 28°-48'
+31.0 P.C. 11°-0' L { T = 134.00
L = 261.8
207
206
205
204
203
+06 P.L. - R
202

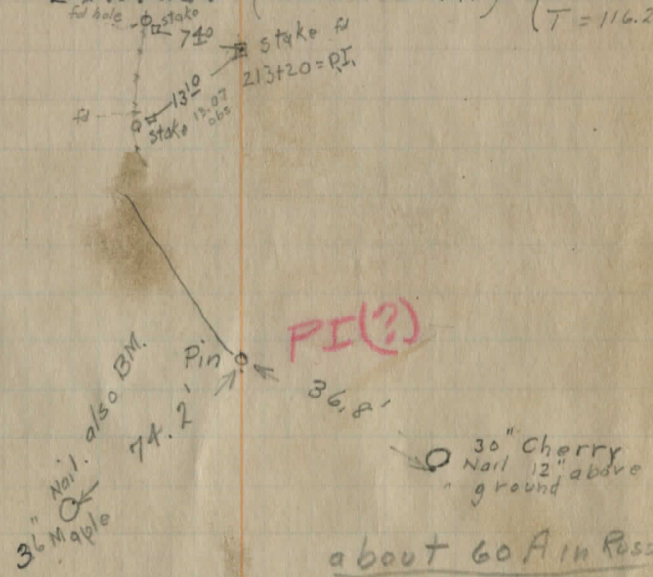
Fence line 200' N. of Road

22

P.C. 212+03.7
212 +50 (46.3)
213+00 (30)
+22

3°- 0 0' = 3°-00
3°- 15' = 6-15
1 - 15 = 7-28

? Twp. Line ✓
14.6' External (13° Curve R.) { I = 29-31
D = 13°-0
L = 227.05
T = 116.27

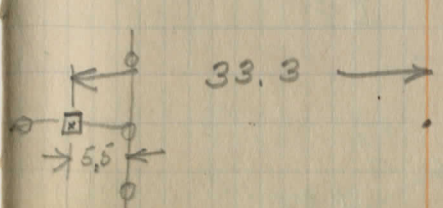


about 60 A in Rose

Ada. Ferris
120 A

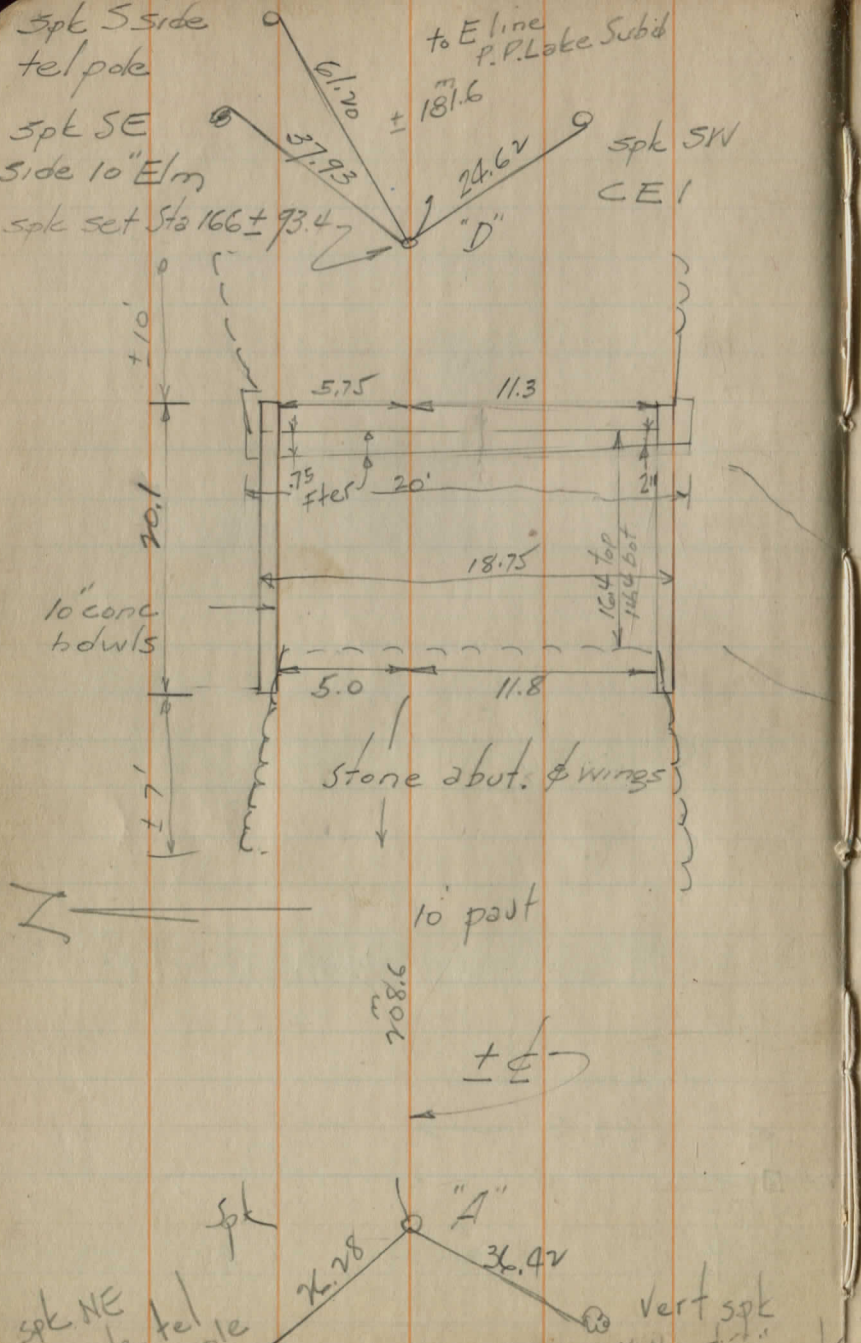
Sistig

+03.0 around last curve
+08 P.L. - L.
215
+82 ℄ Pipe

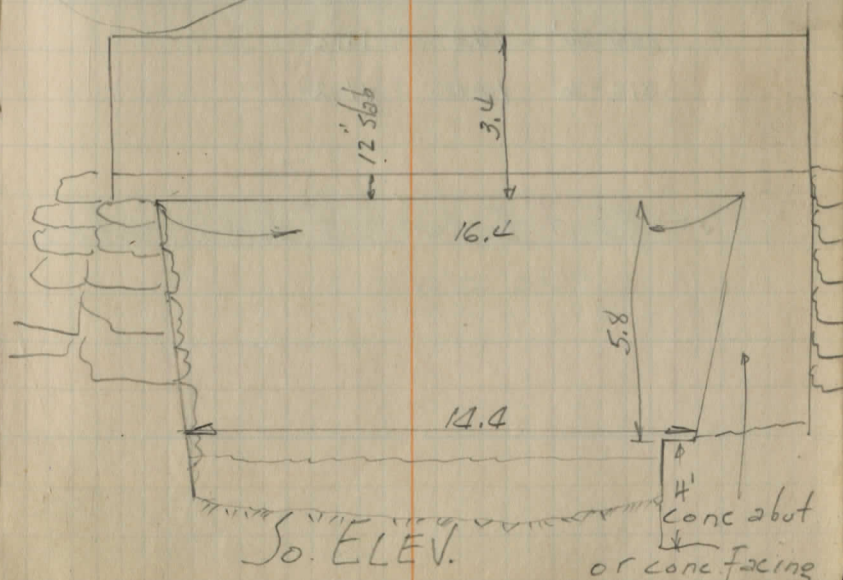


SILVER CREEK BRIDGE
ON BELL STREET

9-17-51
Maynard Bender
-Emery



Note: Bottom of deck irregular due to sags in forms



Sta.	B.S.	HI	F.S.	El
B.M.	6.62	106.62		100.00
Set on "A" B Son "D"				
	∠s Rt	Stadia	rod	
			5.2	
			4.7	
			3.0	
			1.3	
			1.3	
			11.1	
			13.1	
			13.3	
	27°-40'	225	12.8	
	256°-50'	168	11.2	
	318°-30'	160	11.2	

East Footer = 4 down set on blue clay

Assumed Elev. 100.00

Vertical Spk. NW root 10" Poplar S. side of Rd ± 250' W of Brdg.

℄ 200' W of Brdg

℄ 100' W. of Brdg

℄ Rd & ℄ Brdg

Top N Headwall

Top S Headwall

Water Level at Brdg

Flowline S. Side Brdg

Flowline N. Side Brdg

℄ Chan'l (Flowline) H_2O 1.63

H_2O Level @ inlet to Pond ± 2 ft deep

H_2O Level — H_2O 2½' deep

4-17-52 BELL ST.

	+	#1	−	El	& & LEVELS
BM	100			100	
	7.19	107.19			
			3.59	103.60	W End Bridge ℄
			3.42	103.77	E " " "
			5.01	102.18	N END Top W ABUT
			5.35+1½"	101.74	N " " E ABUT
			5.07	102.12	S " " W "
			5.23+1½"	101.83	S " " E "

SILVER CREEK Bridge ℄ SEAT LEVELS

May 19, 21 Clear - Warm.
McClellan
Warren
Waller
BELL ST. S.R. VIL

LEVELS
SOULES CORNERS ROAD

Sta	BS	HI	F.S.	Elev.	
	0.700	1149.09		1148.39	No 2
	1.282	1138.45	11.922	37.17	
	1.728	29.12	11.056	27.39	
	0.42	18.81	10.733	18.39	
	0.590	1107.72	11.673	1107.13	
	3.358	1099.52	11.564	1096.15	
	2.158	1089.73	11.946	1087.57	
			(5.482)	1084.25	
	11.875	1100.79	0.822	1088.91	
	11.574	1112.28	0.083	1100.70	
	10.900	1122.98	0.192	1112.08	
			(0.31)	1122.67	
	7.727	1130.61	0.106	1122.88	
	2.263	21.53	11.332	1119.27	
			(3.322)	1118.21	
	0.200	1110.03	11.704	1109.83	
	10.623	1110.44	10.214	1099.81	←
	11.427	1121.01	0.850	1109.59	
	11.202	1131.86	0.350	1120.66	
	11.879	1143.27	0.470	1131.39	
	11.914	1154.43	0.760	1142.51	
	(11820)		105.777		

1122.67
1069.7
53

No I BM - 12" Maple has been cut down. and stump removed.

BM. Notch in Hickory N. road line Sta. 23 Main Market Rd. C.E - Parkman.

#1 B.M. Spike in root of 15" Maple, north side of road, sta 7+16.

#2 B.M. Spike in root of Elm, south side of road, sta. 26+65

#3 B.M. X S.W. Corner of south head stone of concrete culvert sta 39+55

#4 B.M. x S.W. Corner of west abutment of bridge sta 60.

May 20, 21 Clear - Hot.
{McClellan
{Waller

BS	HI	FS	Elev
	1154.43		
		(10.590)	1143.84
10.063	1163.88	0.608	1153.82
8.362	1167.08	5.162	1158.72
11.205	1177.83	0.458	1166.62
11.104	1187.65	1.282	1176.53
11.852	1199.14	0.362	1187.29
		(5.948)	1193.19
9.382	1207.94	0.582	1198.56
11.845	1218.37	1.420	1206.52
		(1.783)	1216.58
10.118	1228.00	0488	1217.88
1.552	1220.32	9.228	1218.77
		(0.465)	1219.85
0.228	1210.40	10.144	1210.18
0.150	1200.16	10.390	1200.01
0.330	1190.23	10.262	1189.90
0.330	1179.14	11.418	1178.81
0.080	1167.52	11.706	1167.44
		(6.027)	1161.49
0.228	1156.48	11.262	1156.26
0.410	1145.87	11.022	1145.46
0.202	1135.62	10.450	1135.42
0.365	1123.99	11.995	1123.63
(87.806)		118.239	

#5 B.M. South side of road Sta 72+10. 2nd maple East of Bennetts P.L.

#6 B.M. X N.W. Corner of North Cover stone of culvert sta.

#7 B.M. Nail in root of 20" maple S.E. corner of cross roads, Soules Corners Sta 101 +55. also reference to Sta 100 + 89.6.

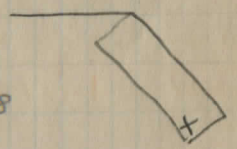
#8 B.M. Nail in root of 16" Maple, south side of road. 3rd maple east of R.A. Warrens house.

#9 B.M. Nail in root of 30" Elm, north side of road sta 134+60.

#10 B.M. Nail in root of 12" Elm, N. side of road Sta 150+85

B.S.	H I	F.S.	Elev.
	1123.99		
		5.437	1118.553

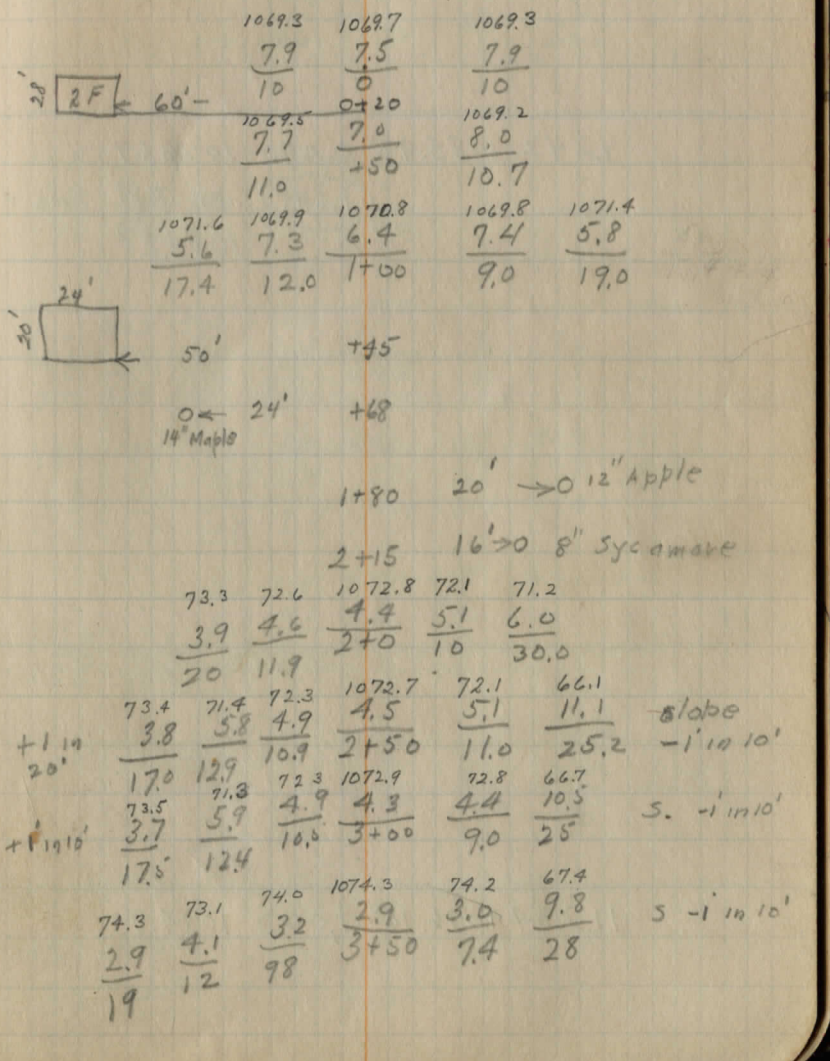
#11 B.M. x S.W corner of wing wall, south side of road. Bridge Sta 162+88



May 21, '21 Clear - Hot.

McClellan π
Warren ½
Waller ½

Sta	B.S.	H.I.	F.S.	Elev	
					Sta 7+16
	0.698	1084.95 ✓		1084.25	B.M.
	3.240	1077.18 ✓	11.012	1073.94	



BS	HI	FS		
	1077.18			
9.242	1085.93 ✓	0.490	1076.69	
		(1.648)	on BM	7+15 ✓
			1084.28	
11.234	1096.16 ✓	1.003	1084.93	

75.6	73.3	73.8	1074.2	73.5	72.9	68.2	
1.6	3.9	3.4	3.0	3.7	4.3	9.0	S-1 in 20
19.5	11.8	10	4+00	10.3	12	29	
	74.4	75.4	76.2	75.6	77.2		
	2.8	1.8	1.0	1.6	0.		S-1 in 10
18.7	11.8	9.3	5+00	8.0	20.6		

79.7	1078.9		
6.2	7.0		
25	18.7		5+00

81.0	80.8	76.3	77.5	1077.9	77.3	76.9	79.0	
4.9	5.1	9.6	8.4	8.0	8.6	9.0	6.9	
25	18.4	11.5	9.3	6+00	11	13.4	18.4	
83.3	82.7	78.5	80.0	1080.8	80.1	78.2	81.1	
2.6	3.2	7.4	5.9	5.1	5.8	7.7	4.8	level
25	17	11.5	8.5	7+00	11.5	15.4	18	
84.9	83.9	80.8	81.8	1082.1	81.7	80.3	81.1	
1.0	2.0	5.1	4.1	3.8	4.2	5.6	3.8	level
25	17.8	12.5	9.9	8+0	9.3	13	14.7	
		82.5	83.2	1083.6	82.9	83.5		
		3.4	2.7	2.3	3.0	2.4		level
		13.0	11.4	9+00	10.0	14.7		

1086.7	1086.4		
9.5	9.8		
25	20.6		9+00

BS	HI	FS.
	1096.16	

10.050	1105.39 ✓	0.823	1095.34	

96.2

91.3	90.9	85.8	1085.9	85.6	84.2	86.0	
4.9	5.3	10.4	10.3	10.6	12.0	10.2	level
25	21.9	12	10+00	9.2	15.6	16.8	
93.1	92.7	87.6	1087.5	86.3	87.7		
3.1	3.5	8.6	8.7	9.9	8.5		
25	22.9	11.4	10+50	13.1	17.7		
94.7	88.7	1089.0	88.7	87.7	89.6		
1.5	7.5	7.2	7.5	8.5	6.6		
25	11.6	11+00	12.2	16.0	18.9		
95.5	90.3	1090.5	89.2	90.7			
0.7	5.9	5.7	7.0	5.5		level	
25	12.0	11+50	14.0	18.3			
96.8	92.6	1092.2	92.7				
-0.6	3.6	4.0	3.5				
30	12.5	12+00	25.3	also fence.			
		1095.2					
		1.0					
		12+50					

97.0	93.7	95.7	1095.2	95.6	92.9	94.9	
8.4	11.7	9.7	10.2	9.8	12.3	10.5	
25	15.9	11.9	12+50	5.0	14.9	20.3	
97.7	94.6	95.6	1095.6	95.2	94.5	96.2	
7.7	10.8	9.8	9.8	10.2	10.9	9.2	
25	18.5	16.3	13+00	5.5	7.9	23.9	
99.8	97.2	98.1	97.0	1097.2	97.0	96.3	99.1
5.6	8.2	7.3	8.4	8.2	8.4	9.1	6.3
25	18.4	15.4	11.0	14+00	4.2	7.0	14.9

5 +1 10 15'

May 23, 21 Clear - hot.
{McClellan
Warren
Waller

BS	HI	FS	Elev.	
	1105.39			
11.638	1114.70	2.325	1103.06	T.P. 01
11.364	1125.53	0.534	1114.17	
11.364				

1101.3 1100.2 1098.6 1099.7 1100.1 1099.5 1098.3 1100.5
4.1 5.2 6.8 5.7 5.3 5.9 7.1 4.9 level
25 15.6 13.0 9.9 15+00 6.9 9.4 13.4

02.2 01.7 09.8 02.0 1102.2 01.7 09.5 02.2
12.5 13. 12.7 12.5 13. 12.5
25 14.9 11.7 7.4 16+00 9.0 11.7 14.4 level

03.7 03.5 02.1 03.1 1103.8 03.3 01.9 03.2 04.9
11.0 11.2 12.6 11.6 10.9 11.4 12.8 11.5 9.8
25 12.5 9.7 6.9 17+00 9.7 12.6 14.7 26.9 fence

fence 07.2 07.1 03.4 04.5 1105.3 04.6 03.1 04.6 08.2
23 7.5 7.6 11.3 10.7 9.4 10.1 11.6 10.1 6.5
25 14 8.9 6.8 18+00 10.2 13.2 14.9 25.4

10.0 10.1 05.5 06.7 1107.4 06.4 05.3 11.4
f. 4.7 4.6 9.2 8.0 7.3 8.3 9.4 3.3 level
24 25 15.1 9.9 6.9 19+00 8.7 11.3 18.9

12.0 12.0 08.2 09.3 1110.1 09.1 07.9 14.7
f. 2.7 2.7 6.5 5.4 4.6 5.6 6.8 1.0 lev.
24 25 16.9 11.9 9.4 20+00 8.2 11.6 19.2

13.2 13.5 11.0 12.6 1113.6 12.3 10.9 13.5
1.5 1.2 3.7 2.1 1.1 2.4 3.8 1.2 f
25 14.9 12.5 8.7 21+00 9.0 12.1 14.9 26.8

11.25.5

14.2 14.4 13.0 14.2 1114.9 14.0 12.9 14.5 15.4
f 11.3 11.1 12.5 11.3 10.6 11.5 12.6 11.0 10.1 f
25 13.8 11.6 9.6 22+00 9.6 12.2 14.5 25.6

B.S.	HI	F.S.	Elev.	
	1125.53			
		2.705	1122.82 +.15	BM #2
8.204	1132.51 ✓	1.22	1124.31	

15.5 f 10.0 25 | 15.8 9.7 13.2 | 14.2 11.3 10.9 | 15.6 9.9 7.7 | 1116.5 9.0 23+00 | 15.5 10.0 10.5 | 14.1 11.4 13.9 | 15.7 9.8 15.6 | 16.5 9.0 24.9 f

18 f 3 7.2 25 | 18.0 7.5 15.8 | 15.2 10.3 10.4 | 16.5 9.0 7.2 | 1117.0 8.5 24+00 | 16.3 9.2 10.2 | 15.3 10.2 12.6 | 16.5 9.0 14.3 | 18.0 7.5 25.8 f

20.4 f 5.1 25 | 20.1 5.4 14.3 | 16.7 8.8 10.4 | 17.9 7.6 7.4 | 1118.6 6.9 25+00 | 17.7 7.8 8.9 | 16.8 8.7 10.9 | 19.5 6.0 14.9 | 21.0 f 4.5 25.0

21.9 3.6 25 | 21.4 4.1 15.9 | 18.4 7.1 11.8 | 19.5 6.0 9.6 | 1120.2 5.3 26+00 | 19.3 6.2 8.5 | 18.3 7.2 10.7 | 21.3 4.2 14.5 | 21.6 3.9 f 24.3

level

23.0 2.5 25 | 22.9 2.6 15.5 | 20.8 4.7 13.8 | 22.0 3.5 11.2 | 1122.7 2.8 27+00 | 21.9 3.6 7.7 | 20.7 4.8 10.6 | 22.2 3.3 12.8 | 23.4 2.1 f 24.3

25.1 0.4 25 | 23.7 1.8 15.9 | 22.2 3.3 13.9 | 23.6 1.9 10.9 | 1124.6 0.9 28+00 | 23.4 2.1 8.6 | 22.2 3.3 11.1 | 23.6 1.9 14.0 | f level 23.9

24.7 0.8 25 | 24.1 1.4 16.6 | 22.8 2.6 14.5 | 24.0 1.5 11.5 | 1124.5 1.0 29+00 | 24.0 1.5 7.2 | 23.0 2.5 9.9 | 24.1 1.4 11.0 | level f 24.8

24.4 8.1 25 | 24.3 8.2 14.9 | 23.5 9.0 13.2 | 24.7 7.8 10.2 | 1125.4 7.1 30+00 | 24.5 8.0 7.5 | 23.4 9.1 10.0 | 24.5 8.0 11.7 | 24.5 f. 8.0 24.0

BS	HI	F.S.	Elev.
	1132.51		
6.25	1127.29 ✓	11.474	1121.04

24.8 24.8 24.0 25.0 1125.5 24.9 23.9 25.0 25.3
7.7 7.7 8.5 7.5 7.0 7.6 8.6 7.5 f 7.2
25 13.5 12.3 10.3 31+00 6.7 9.0 10.6 22.1

27.3 26.3 25.0 25.8 1126.4 25.6 24.8 26.5 27.3 f
5.2 6.2 7.5 6.7 6.1 6.9 7.7 6.0 5.2
25 13.5 11.5 9.1 32+00 6.8 9.0 11.4 21.3

28.8 f 27.6 26.4 27.2 1127.8 27.2 26.3 27.8 28.3
3.7 4.9 6.1 5.3 4.7 5.3 6.2 4.7 4.2 f
25 12.4 10.0 7.9 33+00 8.9 11.5 13.1 21.6

28.9 28.6 27.3 28.0 1128.5 27.9 26.9 28.1 28.7 f
3.6 3.9 5.2 4.5 4.0 4.6 5.6 4.4 3.8
f 25 11.2 8.9 6.9 34+00 10.9 12.9 15 21.9
24

27.9 28.1 27.4 27.9 1128.0 27.7 26.5 27.8 28.5 f
4.6 4.4 5.1 4.6 4.5 4.8 6.0 4.7 4.0
25 11 8.3 6.0 35+00 9.8 12.9 15.1 22.4

1127.7
4.8
35+80

29.2 28.5 25.8 26.6 11271 26.3 25.1 27.3 29.7 f
3.3 4.0 6.7 5.9 5.4 6.2 7.4 5.2 2.8 land
25 12.9 8.2 6.0 36+00 8.8 11.8 13.9 23.0

1127.3 HI

24.8 24.5 20.0 21.0 1121.4 20.6 19.7 25.6 24.0 f
2.5 2.8 7.3 6.3 5.9 6.7 7.6 1.9 1.3
-1.10' 25 17.1 10.8 8.3 37+00 7.6 9.8 17.9 23.9

19.1 18.8 17.6 18.9 1119.5 18.9 16.9 20.8
8.2 8.5 9.7 8.4 7.8 8.4 10.4 6.5 f
R 25 16.5 13.9 9.7 38+00 5.9 10.9 22.5

21 T

1127.29

5.169 | 1123.53 ✓ | 8.928 | 1118.36 +15 | T.P. #3 BM.

1127.3 HI

38+30 T 10' ⌀

15.7 16.6 15.6 17.3 1117.8 17.1 15.7 16.7 16.2
11.6 10.7 11.7 10.0 9.5 10.2 11.6 10.6 11.1 f
25 16.6 14.9 10.8 39+00 8.0 12.3 13.9 22.3 T

1114.3 - 13.0 bottom of culvert ditch
1117.6 - 9.7 ℄ bridge.

16.2 15.9 15.2 16.2 1116.9 16.3 15.5 16.3 16.9
11.1 11.4 12.1 11.1 10.4 11.0 11.8 11.0 10.4 f
25 14 12.5 10.2 40+00 9.9 12.7 15.2 21.8

1123.5 HI

40+40 13.2' → T

17.2 16.3 17.2 1117.6 17.1 16.1 19.9
6.3 7.2 6.3 5.9 6.4 7.4 3.6
15.5 13.2 10.7 41+00 10.6 12.6 22.4 f. posts

18.0 18.1 17.2 18.3 1118.9 18.4 17.5 18.3 19.7
5.5 5.4 6.3 5.2 4.6 5.1 6.0 5.2 3.8
25 14.9 13.5 10.3 42+00 10.7 13.5 14.8 22.5

+68 17' — T

17.7 17.9 16.8 17.9 1118.8 18.2 17.1 18.1 19.5
5.8 5.6 6.7 5.6 4.7 5.3 6.4 5.4 4.0
25 15.1 13.6 11.2 43+00 9.8 12.0 13.8 25

17.2 17.1 16.3 17.3 1118.3 17.4 16.0 18.3 19.9
6.3 6.4 7.2 6.2 5.2 6.1 7.5 5.2 3.6
25 16.2 14.6 12.0 44+00 9.5 12.3 14.4 25

+22 32' → O 18" M

16.0 16.1 15.2 16.1 1116.8 16.0 15.1 17.0 18.8
7.5 7.4 8.3 7.4 6.7 7.5 8.4 6.5 4.7
25 14.4 13.0 10.3 45+00 9.5 11.5 13.9 25

+07 21' → T

30" Elm.
30 O ← 32'
+22
O 8" M. cherry 26'
+50

BS	HI	FS	Elev.
	1123.53		
1.635	1114.90 ✓	10.268	1113.26

1123.5 HI

47

15.1	15.4	13.7	14.9	1115.2	14.8	13.5	16.0	17.5
8.4	8.1	9.8	8.6	8.3	8.7	10.0	7.5	6.0
25	14.1	12.7	9.8	46+00	9.2	11.8	14.6	25
14.4	14.1	12.4	13.5	1114.2	13.3	12.2	14.5	15.5
9.1	9.4	11.1	10.0	9.3	10.2	11.3	9.0	8.0
25	15.3	13.2	10.8	47+00	8.9	11.1	14.2	25

1114.9 HI

47+03 — 22' → T

13.2	12.8	11.2	12.6	1113.3	12.3	11.2	13.3	13.9
1.7	2.1	3.7	2.3	1.6	2.6	3.7	1.6	1.0
25	14.9	12.9	9.5	48+00	9.0	12.5	14.9	25
12.1	11.9	09.5	10.5	1111.5	10.7	09.4	11.9	12.7
2.8	3.0	5.4	4.4	3.4	4.2	5.5	3.0	2.2
25	15.5	12.7	10.5	49+00	9.4	12.4	15.5	25

49+06 — 23.6 — T

10.2	09.9	07.9	09.1	1110.1	09.2	08.0	10.4	11.4
4.7	5.0	7.0	5.8	4.8	5.7	6.9	4.5	3.5
25	14.2	12.2	9.8	50+00	10.2	13.2	16.2	25
07.9	07.8	06.4	07.5	1108.2	07.9	06.3	08.1	09.0
7.0	7.1	8.5	7.4	6.7	7.5	8.6	6.8	5.9
25	13.2	11.8	9.0	51+00	9.4	12.0	14.0	25

+02 — 23' → T

07.8	07.1	04.3	05.5	1106.3	05.2	04.0	06.8	07.5
7.1	7.8	10.6	9.4	8.6	9.7	10.9	8.1	7.4
25	15.6	12.8	10.4	52+00	8.8	11.8	14.5	25
03.7	03.9	03.0	04.1	1104.9	04.1	02.8	03.9	04.2
11.2	11.0	11.9	10.8	10.0	10.8	12.1	11.0	10.7
25	14.9	12.9	10.9	53+00	8.2	10.9	12.4	25

52+85 — 23' — T

BS	HI	FS	Elev.
3.515	1106.75 ✓	11.660	1103.24
		6.73	1100.02 BM #4
			+.21

HI = 1106.8

02.9	03.1	02.1	03.1	1103.7	02.9	01.8	03.3	03.3	
3.9	3.7	4.7	3.7	3.1	3.9	5.0	3.5	3.5	
25	15	13.0	11.0	54+00	7.3	9.3	11.3	24.5	f
				+73	-24' → T				
02.3	02.3	01.3	02.4	1102.9	02.1	00.9	02.5	03.0	
4.5	4.5	5.5	4.4	3.9	4.7	5.9	4.3	3.8	
25	16.5	14.7	12.4	55+00	6.9	9.2	11.9	24.7	f
				℄ 10' Gate +65					
01.9	01.9	00.3	01.8	1102.1	01.1	00.0	02.5	02.7	
4.9	4.9	6.5	5.4	4.7	5.7	6.8	4.3	4.1	
25	16.9	14.9	12.4	56+00	7.5	9.9	13.6	24.9	f
03.0	02.1	1099.7	00.8	1101.4	00.5	1099.3	03.3	03.9	
3.8	4.7	7.1	6.0	5.4	6.3	7.5	3.5	2.9	
25	18.0	14.9	12.5	57+00	6.8	9.8	16	26.4	f
				+82	14" H. Maple in fence line				
	02.1	98.1	99.3	1099.8	99.1	98.3	03.2	03.5	
hedge	4.7	8.7	7.5	7.0	7.7	8.5	3.6	3.3	
33	25	16.0	13.3	58+00	8.8	11.2	20.5	27.9	f
				+49	26' → T				
96.5	96.6	96.8	98.8	1099.1	98.6	97.4	98.3	97.4	
10.3	10.2	10.0	8.0	7.7	8.2	9.4	8.5	9.4	
31.6	25	12.7	7.3	59+00	10.4	12.9	14.0	29.9	f
hedge									

May 24, 1921 Cool - Cloudy
{ McClellan
{ Warren ½ day
{ Waller ½ day
Rain - all afternoon.

	BS	HI	FS	Elev
	11.028	1111.05 ✓		1100.02
	11.465	1121.25 ✓	1.264	1109.79

6.8 HI 1111.1 49

1093.1
18.0 low water level!
1099.9
11.2 ℄ Bridge floor

1096.1
15.0
25

60

creek.

60+50
+60
61+04

T 5'
beg. of hedge

32'

97.6	98.5	97.6	98.7	1099.1	98.6	97.3	98.7	98.7
13.5	12.6	13.5	12.4	12.0	12.5	13.8	12.4	12.4
25	10.6	9.0	7.2	61+00	10.2	12.7	14.4	26.8 h
98.6	99.4	98.7	99.6	1100.3	99.5	98.6	99.6	99.1
12.5	11.7	12.4	11.5	10.8	11.6	12.5	12.5	12.0
25	11.1	9.5	7.4	62+00	8.5	10.9	12.9	26.5 h
03.4	02.9	00.3	01.3	1102.0	01.3	00.2	03.7	
7.7	8.2	10.8	9.8	9.1	9.8	10.9	7.4	
25	17.8	9.9	7.8	63+00	8.8	12.2	16.5	27.4 h
06.1	06.2	03.0	04.0	1104.7	04.1	03.1	05.4	
5.0	4.9	8.1	7.1	6.4	7.0	8.0	5.7	h
25	18	12	9.0	64+00	8.2	12.0	16	25.8
				+72		T in hedge.		
08.3	08.4	05.9	07.0	1107.6	06.9	05.6	07.6	07.6
2.8	2.7	5.2	4.1	3.5	4.2	5.5	3.5	level
25	18.8	12.5	10.3	65+00	7.9	11.8	13.6	24.6 h.

65+62 end of hedge, beg of wire f.

HI = 1121.3

13.3	12.7	09.9	10.8	1111.1	10.5	09.6	12.7	12.5
8.0	8.6	11.4	10.5	10.2	10.8	11.7	8.6	8.8
25	19.0	12.3	9.6	66+00	8.0	9.9	13.8	24.0 T
				+72	T 6'			

BS	HI	FS	Elev
	1121.25		
11.866	1132.78 ✓	0.338	1120.91
11.536	1144.11 ✓	0.205	1132.57
11.225	1154.34 ✓	1.000	1143.11
		10.25	#5 BM
			+.25

HI: 1121.3

19.3 14.8 16.1 1116.5 16.3 14.6 21.3
2.0 6.5 5.2 4.8 5.0 6.7 0.0 26.8 conc. wall
25 14.8 11 67+00 8.2 10.9 19.8
14" Elm 19' +50

HI = 1132.8

25.5 21.8 22.8 1122.7 22.0 21.1 28.5
+1.05' 2.3 11.0 10.0 10.1 10.8 11.7 4.3
25 12.8 9.3 68+00 9.0 11.2 26.0
34' +20
24"M.
20'
+85
32.3 32.3 27.2 29.2 1129.5 28.9 28.0
0.5 0.5 5.6 3.6 3.3 3.9 4.8
25 22.5 14.9 10.9 69+00 10.0 11.9
24"M 37' +02
T 23' +28

HI = 1144.1

1137.1
7.0
21.2
69+00
+78
39.6 38.5 36.2 37.1 1137.1 36.2 35.2 40.2
12"Ø 4.5 5.6 7.9 7.0 7.0 7.9 8.9 3.9
f 35.2 25 12.2 9.5 70+00 9.0 11.7 17
Ø15" M. infence line +30
+65
41.0 41.2 38.5 39.5 1140.0 39.7 38.9 41.5 42.0
3.1 2.9 5.6 4.6 4.1 4.4 5.2 2.6 2.1
f 31.4 16.0 12.2 10.1 71+00 9.8 11.3 15.0 27.5 f
Ø12.5 T +75
43.5 41.2 42.3 1143.1 42.3 41.6 43.5 43.5
0.6 2.9 1.8 1.0 1.8 2.5 0.6 0.6
f 29.6 12.7 9.6 7.5 72+00 9.4 12.2 14.4 29.4 f

May 25, 1921 Clear - Warm

McClellan
Warren
Waller

BS	HI	FS	Elev.
	1154.34		
10.794	1164.77 ✓	0.360	1153.98
4.152	1162.86 ✓	6.064	1158.71

HI = 1154.3

1146.7
7.6
73+00

48.9	48.5	46.0	46.5		46.0	45.7	48.3	48.6
5.4	5.8	8.3	7.8		8.3	8.6	6.0	5.7
f 28.1	16.7	6.0	4.7		10.2	12.7	17.9	28.2 f

1152.1
2.2
74+00

51.1	51.7		52.1	51.6	53.5
3.2	2.6		2.2	2.7	0.8
3.8	1.9		8.9	11.1	12.0

HI = 1164.8

1152.1
74+00

59.7	56.8		57.3	58.0
5.1	8.0		7.5	6.8
26	11.2		19.2	27.8 f

-1.10'

1158.6
6.2
75+00

62.4	61.8	57.2	58.1		58.0	57.4	60.3	61.4
2.4	3.0	7.6	6.7		6.8	7.4	4.5	3.4
25	12.9	4.9	2.9		9.6	12.4	14.6	27.9 f

lead

1161.8
3.0
76+00

62.7	61.7		61.0	60.4	61.9	61.6
2.1	3.1		5.8	4.4	2.9	3.2
25	7.5		10.3	12.5	14.5	27.3 f

62.2
2.6
+20

1159.4
5.4
77+00

62.1	60.9	57.9	58.8		58.8	58.2	60.5	61.3
2.7	3.9	6.9	6.0		6.0	6.6	4.3	3.5
25	13.7	10.2	7.8		9.8	12.4	15.2	26.8 f

1158.8
6.0
78+00

57.6	56.8	58.6		58.2 55.8	56.3
7.2	8.0	6.2		6.6 9.0	8.5
25	11.5	7.5		9.0 15	25.9 f

HI = 1162.9

+07 ditch to right

1159.0
3.9
79

58.4	57.2	58.1		58.1	56.6	57.9	58.4
4.5	5.7	4.8		4.8	6.3	5.0	4.5
10.5	9.0	6.5		8.9	12.5	13.9	26.4 f

59.9	58.1	59.0	59.9	58.8	58.0	60.4	61.0
3.0	4.8	3.9	3.0	4.1	4.9	2.5	1.9
11.8	9.0	6.7	80	96	11.4	12.9	26.3 f

+26

BS	HI	FS	Elev.
	1162.86		

8.527 1169.43 ✓ 1960 1160.90

10.42 +.29 # 6 BM

HI = 1162.9

61.9	61.3	59.8	60.8	1161.7	60.8	59.8	61.1	60.8
1.0	1.6	3.1	2.1	1.2	2.1	3.1	1.8	2.1 f
f 26.4	11.9	10.2	7.3	81+00	11.5	13.7	15.0	22.2 26.6

63.9	62.8	60.6	61.7	62.5	61.6	60.6	61.9	62.3
-1.0	0.1	2.3	1.2	0.4	1.3	2.3	1.0	0.6
f 26.1	11.3	9.0	6.8	88+00	11.7	13.9	15.5	26.9 f

62.9	62.9	56.9	58.0	1158.9	57.7	56.7	61.2	61.4
0.0	0.0	6.0	4.9	1.0	5.2	6.2	1.7	1.5
f 26.3	18.3	10.0	7.9	83+00	11.6	13.6	20.2	26.8 f

	55.9	57.6	1157.7	57.6	56.2	56.4	
	7.0	5.3	5.2	5.3	6.7	6.5	
f	26.8	9.5	84+00	7.8	14.9	25.5 f	
			58.0		53.6		
			4.9		9.3	bottom of Cr.	
			℄ Culvert		13		

58.2	57.7	56.5	57.4	1157.9	57.0	56.4	57.4	57.5
4.7	5.2	6.4	5.5	5.0	5.9	6.5	5.5	5.4
f 26.8	13.8	12.2	9.6	85+00	5.4	7.7	9.3	25.3

59.2	58.3	57.4	58.0	58.3	57.8	57.2	58.0	58.8
3.7	4.6	5.5	4.9	4.6	5.1	5.7	4.9	4.1
½ f 26.0	12.9	11.9	9.7	86+00	5.8	8.2	9.4	25

beginning ℄ ledge.

	60.9	58.4	59.4	1160.1	59.1	58.4	61.2
h	2.0	4.5	3.5	2.8	3.8	4.5	1.7
27	17.9	11.4	9.2	87+00	8.2	10.9	19.3

HI = 1169.4

63.4	60.8	59.3	60.4	1161.3	60.2	59.2	62.1	62.4
h. 6.0	8.6	10.1	9.0	8.1	9.2	10.2	7.3	7.0
2.8 25	14.2	12.6	9.7	88+00	8.9	11.1	14.2	22

BS	HI	FS	Elev.
	1169.43		
9.333	1178.40 ✓	0.362	1169.07
11.770	1189.09 ✓	1.085	1177.32

HI = 1169.4

h.

	65.6	65.1	61.3	62.5	1163.5	62.3	61.1	64.0	65.3
	3.8	4.3	8.1	6.9	5.9	7.1	8.3	5.4	4.1
	27	16.9	11.1	8.0	89+00	9.5	11.3	14.0	25
	68.2	67.2	63.3	64.2	1165.2	63.8	63.0	66.0	67.4
	1.2	2.2	6.1	5.2	4.2	5.6	6.4	3.4	2.0
	27	16.7	9.7	7.0	90+00	9.9	11.5	14.0	22
		68.0	65.3	66.2	1167.3	66.4	65.0	68.2	69.4
+1 in 5'		1.4	4.1	3.2	2.1	3.0	4.4	1.2	0.0
		12.1	9.7	9.5	91+00	9.2	11.3	13.6	15.6

Level

HI = 1178.4

71.2	69.8	67.7	68.7	1169.8	68.8	67.6	70.7	
7.2	8.6	10.7	9.7	8.6	9.6	10.8	7.7	+1 in 15'
25	12	9.9	7.4	92+00	8.7	11.0	12.9	
73.3	72.4	70.2	71.2	1172.2	70.9	70.0	72.3	
5.1	6.0	8.2	7.2	6.2	7.5	8.4	6.1	+1 in 15
25	14.4	11.2	8.9	93+00	8.9	11.7	13.2	
74.4	73.9	71.7	72.7	1173.6	72.5	71.8	74.0	
4.0	4.5	6.7	5.7	4.8	5.9	6.6	4.4	+1 in 20'
25	13.6	10.9	8.9	94+00	9.4	11.9	13.4	
76.0	75.5	73.7	74.7	1175.6	74.5	73.7	75.8	76.5
2.4	2.9	4.7	3.7	2.8	3.9	4.7	2.6	1.9
25	12.7	10.9	8.0	95+00	9.1	11.9	13.4	25
78.4	77.3	75.1	76.2	1177.0	76.2	75.3	77.4	78.4
0.0	1.1	3.3	2.2	1.4	2.2	3.1	1.0	0.0
25	13.6	10.9	8.7	96+00	10.4	12.5	14.5	25

HI = 1189.1

80.1	79.6	76.9	77.8	1179.0	77.9	77.1	79.7	80.6
9.0	9.5	12.2	11.3	10.1	11.2	12.0	9.4	8.5
25	14.8	11.9	9.4	97+00	10.3	12.3	15.4	25

B.S.	HI	F.S.	Elev.	
	1189.09			
7.820	1196.74 ✓	0.17	1188.92	
		3.21	+.39	BM#7
10.05	1205.28 ✓	1.507	1195.23	

HI = 1189.1

81.6 81.5 78.6 79.5 1180.5 79.6 78.7 81.7 82.1
7.5 7.6 10.5 9.6 8.6 9.5 10.4 7.4 7.0
25 15.1 12.9 9.9 98+00 9.2 11.2 15 25

84.4 84.1 80.5 81.7 1182.9 81.8 81.0 84.3 85.1
4.7 5.0 8.6 7.4 6.2 7.3 8.1 4.8 4.0
25 15.5 11.9 9.7 99+00 9.6 11.3 15.2 25

88.0 87.2 83.6 84.6 1185.6 84.9 83.5 87.1
1.1 1.9 5.5 4.5 3.5 4.2 5.6 2.0 +1 in 10'
25 15.3 12 9.2 100+00 10.3 13.9 18.3

HI = 1196.7

1189.4 90.8 90.4
7.3 5.9 6.3
100+90 50 100 ℄ Rd.

℄

90.5 90.7 90.0 90.1
6.2 6.0 6.7 6.6
150 100 50 101+00
91.6
5.1
101+26

94.9 90.8 91.9 1192.8 92.2 91.2 93.5 94.4
1.8 5.9 4.8 3.9 4.5 5.5 3.2 2.3
25 11.9 9.9 102+00 8.6 10.9 13.7 25

95.9 94.2 92.3 93.0 1194.0 93.4 92.7 95.9
same slope to mate 0.8 2.5 4.4 3.7 2.7 3.3 4.0 0.8 +1' in 10'
2R 11.6 9.0 7.4 103 9.9 11.9 16.3

95.7 1196.1 95.1 94.3
1.0 0.6 1.6 2.4
5.7 104 10.7 12.4 17.0

1197.0 97.9 98.3
8.3 7.4 7.0
25 17 25
104

BS	HI	FS	Elev.
	1205.28		

DH
35'
9

5.330	1209.04 ✓	1.574	1203.71	

HI = 1205.3

1201.2 96.9 97.7 1198.3 97.3 96.3 1200.0

f/19 level 4.1/14.7 8.4/6.9 7.6/4.4 7.0/105 8.0/11.1 9.0/13.9 5.3/17.6

1201.3 98.8 99.5 1199.9 99.3 98.3 1200.8

f/24 level 4.0/12.7 6.5/9.4 5.8/7.7 5.4/106 6.0/11.4 7.0/13.8 4.5/16.6 level

03.7 02.7 00.2 01.0 1201.7 00.8 98.8 01.3 03.3

f/20 1.6/25 2.6/13.2 5.1/8.9 4.3/7.0 3.6/107 4.5/11.8 5.5/13.6 4.0/16.8 2.0/23.7 level

02.7 2.4/25

1202.6 2.7/108 02.4 2.9/13.5 02.6 2.7/25

1201.4 3.9 depth of ditch across Smith's land at pipe.

02.4 2.9/25 02.7 2.6/9.2 02.0 3.3/5.5 03.0 2.3/6.5 12036 1.7/109 02.8 2.5/10.7 01.8 3.5/12.9 02.6 2.7/13.8 TI in 10'

HI = 1209.0

03.1 02.1 028 1203.5 03.0 02.0 03.1

level 5.9/11.0 6.9/9.4 6.2/7.5 5.5/110 6.0/9.0 7.0/11.3 5.9/12.5 level

03.2 02.5 03.3 1203.6 03.3 02.5 03.0

level 5.8/10.5 6.5/9.7 5.7/7.7 5.4/111 5.7/7.9 6.5/9.9 6.0/10.8 level

03.9 02.9 03.7 1204.4 03.4 02.6 03.7

level 5.1/13.7 6.1/11.3 5.3/9.3 4.6/112 5.6/8.0 6.4/10 5.3/11.0 level

04.3 03.3 04.1 1204.8 03.9 02.9 04.1

level 4.7/14.0 5.7/12.9 4.9/10.5 4.2/113 5.1/7.7 6.1/9.7 4.9/11.0 level

1209.04

8.640 1217.46 0.22 1208.82

0.60 +28 16.58 1208.86 #8 BM

HI = 1209.0

	05.0	03.9	04.6	1205.2	04.4	03.6	04.7	
level	4.0	5.1	4.4	3.8	4.6	5.4	4.3	level
	14.3	12.8	10.9	114	6.9	9.2	10.2	
	06.0	04.8	05.5	1206.2	05.2	04.2	05.8	
level	3.0	4.2	3.5	2.8	3.8	4.8	3.2	+1' in 15'
	14.9	12.9	11.3	115	8.3	10.3	12.0	
	07.3	05.9	06.7	1207.6	06.4	05.4	07.1	
level	1.7	3.1	2.3	1.4	2.6	3.6	1.9	+1 in 15'
	14.2	12.5	10.6	116	8.3	10.4	11.9	

HI = 1217.5

	08.4	07.5	08.3	1209.2	08.0	06.8	08.5	
level	9.1	10.0	9.2	8.3	9.5	10.7	9.0	+1' in 15'
	13.8	12.2	9.5	117	8.5	10.4	12.3	
	09.8	08.7	09.5	1210.5	09.1	08.0	09.7	
-1 in 15'	7.7	8.8	8.0	7.0	8.4	9.5	7.8	+1 in 15'
	12.8	11.1	9.1	118	8.7	10.5	11.9	
	11.0	11.1	09.9	10.5	1211.8	10.9	09.9	11.4
	6.5	6.4	7.6	7.0	5.7	6.6	7.6	6.1	level
	25	14.9	12.4	10.8	119	8.7	10.5	12.2	
			13.3	13.3	1213.5	13.2	13.8	
			4.2	4.2	4.0	4.3	3.7	
			25	8.6	120	9.1	18.0	

12.3
5.2 Bottom of ditch
Iron Pipe.

	15.1	13.8	14.5	1215.4	14.9	14.0	15.3	16.9	
level	2.4	3.7	3.0	2.1	2.6	3.5	2.2	0.6	
	14.1	12.1	10.2	121	8.0	10.2	12.1	33.4	f
	16.9	15.4	16.0	1216.5	15.8	14.8	16.2		
level	0.6	2.1	1.5	1.0	1.7	2.7	1.3		f
	10.9	9.6	7.4	122	7.8	10.2	11.9		33.9

1217.46

BS	HI	F.S.	Elev.
11.804	1228.10	1.162	1216.29
0.503	1225.51	3.087	1225.01

HI = 1228.1

18.5 16.8 17.7 1218.4 17.5 16.3 18.0 20.5

level 9.6/11.9 11.3/8.9 10.4/6.9 9.7/12.3 10.6/7.4 11.8/9.8 10.1/11.9 7.6/30.5 f

20.6 18.8 19.8 1220.4 19.6 18.4 19.9

level 7.5/10.4 9.3/8.8 8.3/6.3 7.7/12.4 8.5/8.7 9.7/10.9 8.2/12.0 +1 in 10'

22.0 20.4 21.1 1221.7 21.1 20.2 21.4

f level/23.5 6.1/10.6 7.7/8.4 7.0/6.8 6.4/12.5 7.0/9.0 7.9/10.9 6.7/12.1

24.7 24.3 21.7 22.4 1222.9 22.3 21.5 23.1 24.8

f 3.4/23.5 3.8/13.3 6.4/8.9 5.7/7.0 5.2/12.6 5.8/9.3 6.6/11.6 5.0/13.9 3.3/24 f

26.3 24.0 24.6 1225.2 24.4 23.6 26.1 27.6

level 1.8/16.1 4.1/8.9 3.5/6.9 2.9/12.7 3.7/8.9 4.5/10.9 2.0/13.2 0.5/22.5 f

27.0 25.9 1226.1 25.6 24.8 27.6

1.1/16.8 2.2/7.6 2.0/12.8 2.5/7.7 3.3/9.7 0.5/13.6 22.9 f

26.9 25.2 24.3 1224.8 24.3 23.5 24.8

1.2/2.5 2.9/18.6 3.8/8.5 3.3/12.9 3.8/8.7 4.6/10.3 3.3/11.9 24.2 f.

HI = 1225.5

25.1 21.2 19.8 21.0 1221.9 21.0 20.2 23.5

0.4/22 4.3/12.7 5.7/11.0 4.5/9.0 3.6/13.0 4.5/7.7 5.3/9.2 2.0/13.4 Level 24.8 f

f 3.4

21.9 19.4 18.8 17.1 18.0 1218.9 18.0 17.5 20.9

3.6/24 6.1/17.4 6.7/10.7 8.4/8.8 7.5/6.9 6.6/13.1 7.5/9.7 8.6/10.6 4.6/16 Level 25.9 f

f 24

18.9 17.0 16.3 17.2 1218.0 17.5 16.6 18.0 17.5

6.6/24.3 8.6/9.5 9.2/8.6 8.3/6.4 7.5/13.2 8.0/10.4 8.9/12.0 7.5/13.6 8.0/25.8 f

f

May 26, 1921 Clear - warm.

McClellan
Warren
Waller

1225.51 FS

1.345	1221.39	5.47	1220.04	#9 -.20

0.290 | 1209.86 ✓ | 11.824 | 1209.57

HI 1221.4

	16.6	16.0	17.5	1218.0	17.9	16.6	17.2	
	4.8	5.4	3.9	3.4	3.5	4.8	4.2	level
f 24.6	13.5	11.9	7.0	133	10.8	16.3	21.3	

6.6 bottom of ditch 1214.8
3.3 Rd. & culvert. 1218.1

	17.7	17.7	17.3	17.8	1218.4	17.6	16.7	17.3	18.9
	3.7	3.7	4.1	3.6	3.0	3.8	4.7	4.1	2.5
f	25	10.1	9.2	7.4	134	10.8	12.6	13.4	25

	19.0	19.0	18.0	18.7	1219.5	18.7	17.8	18.9	
	2.9	2.4	3.4	2.7	1.9	2.7	3.6	2.5	+1 in 10'
f	25.5	10.9	9.0	7.3	135	11.6	13.3	15.0	

		17.2	15.9	16.5	1217.4	16.6	15.6	16.9	
	level	4.2	5.5	4.8	4.0	4.8	5.8	4.5	+1 in 10'
f	26.0	12.0	9.9	8.0	136	10.2	11.9	14.0	

		15.6	14.0	14.8	1215.7	14.8	13.8	15.2	
	level	5.8	7.4	6.6	5.7	6.6	7.6	6.2	level
f	26.	11.9	9.9	7.9	137	9.0	10.8	12.0	

	15.1	13.8	10.9	12.1	1213.0	12.0	10.9	14.2	
	6.3	7.6	10.5	9.3	8.4	9.4	10.5	7.2	level
f	26.6	13.6	10.9	8.9	138	6.9	8.6	12.3	

HI = 1209.9

11.6	08.8	07.7	08.4	1208.8	08.2	07.4	08.7	
+1.7	1.1	2.2	1.5	1.1	1.7	2.5	1.2	level
26.5	12.7	10.4	9.0	139	6.5	8.4	10.5	

1206.8 { 3.1 ℄ Culvert (Rd way)
1205.1 { 4.8 Bottom of ditch

	05.1	1205.8	05.4	04.7	06.0
	4.8	4.1	4.5	5.2	3.9	level
f	26.5	140	8.7	12.0	14.2

BS	HI	F.S.	Elev.
	1209.86		
0.170	1198.35	11.671	1198.18
0.262	1186.85	11.770	1186.58
	El milk can stand floor at Green's		
0.39	1175.31	11.922	1174.92

HI = 1209.9

	04.7	04.4	00.6	01.4	1202.1	01.5	00.3	04.3	
	5.5	5.5	9.3	8.5	7.8	8.4	9.6	5.6	+1 in 10'
f.	27	16.1	10.4	8.5	14.1	6.6	9.3	14.5	
	01.2	00.9	98.8	96.2	97.7	1198.4	97.5	95.9	01.6	
	8.7	9.0	11.1	13.7	12.2	11.5	12.4	14.0	8.3	+1 in 10'
f	28.9	18.2	11.0	8.9	6.6	14.2	7.5	10.4	16.9	
		98.5	97.9					98.1		
		11.4	12.0					11.8		+1 in 10'
f		28.8	15.9			14.3		18.0		

1198.4

		95.1	93.3	94.1	1194.5	94.0	92.7		
		3.3	5.1	4.3	3.9	4.4	5.7		
		9.0	8.4	6.3	14.3	8.4	11.0		
	94.4	93.6	90.3	88.5	89.7	1190.4	90.1	89.6	92.1	93.7
	4.0	4.8	8.1	9.9	8.7	8.0	8.3	8.8	5.3	4.7
f	29.4	21.8	11.1	9.6	6.9	14.4	11.6	13.4	19.9	25
						℄ Rd R.	90.0	92.8	92.4	
							8.4	5.6	6.0	
							13.0	63.0	31.0	
		87.8	87.8			90.4	91.5		
level		10.6	10.6			8.0	6.9	level	
f		29	24.2		14.5	22.0	29.8		

HI = 1186.9

	81.7	79.7	81.1	1181.4	81.1	80.3	
	5.2	7.2	5.8	5.5	5.8	6.6	
	13.0	12.0	9.9	14.5	7.0	8.4	
	79.1				78.6		
	7.8				8.3	level.	
	29.0			14.6	16.6		

HI = 1175.3

		74.3	71.8	72.9	1173.5	73.0	71.7			
		1.0	3.5	2.4	1.8	2.3	3.6			
		15.3	12.4	10.3	14.6	3.8	7.4			
	71.7	71.7	70.5	68.2	68.6	1168.9	68.7	67.5	71.1	73.7
	3.6	3.6	4.8	7.1	6.7	6.4	6.6	7.8	4.2	1.6
f	28	20.1	16.9	13.6	11.9	14.7	3.9	5.3	9.0	15.8

level

1175.31

1.250 1166.29 10.270 1165.04

4.62 +.18 #10BM 61.49

HI = 1175.3

66.6	67.0	65.4	66.2	1166.6	66.3	65.1	66.2	69.3	
8.7	8.3	9.9	9.1	8.7	9.0	10.2	9.1	6.0	+1'in10'
f 17.4	14.0	12.8	10.7	14.8	3.4	6.0	7.0	13.4	
64.5	65.2	63.4	64.4	1165.0	64.0	63.3	64.9		
10.8	10.1	11.9	10.9	10.3	11.3	12.0	10.4		level
27	12.8	10.9	8.9	14.9	7.5	9.3	10.7		

HI = 1166.3

63.6	63.2	61.3	61.9	1163.0	61.9	61.3	63.2	65.0
2.7	3.1	5.0	4.4	3.3	4.4	5.0	3.1	1.3
25.5	12.7	11.0	9.0	15.0	10.0	12.5	15.3	25
		1158.6		1161.7				
		7.7		4.6				
		bottom of pipe		℄ pipe				

← ditch across field

57.7	59.7	60.5	1161.6	61.0	60.3	61.9		
8.6	6.6	5.8	4.7	5.3	6.0	4.4		level
f + ditch 22	9.6	7.2	15.1	11.9	13.8	16.4		
59.7	60.9	60.1	60.7	1161.2	60.4	59.8	61.0	
6.6	5.4	6.2	5.6	5.1	5.9	6.5	5.3	level
25	9.4	7.4	5.8	15.2	13.2	15.4	16.9	
60.1	61.0	60.4	61.2	1161.9	61.1	60.2	61.6	64.2
6.2	5.3	5.9	5.1	4.4	5.2	6.1	4.7	2.1 level
-1'in5' 25	13.2	11.9	9.4	15.3	10.4	12.1	14.5	23.9
				1161.2				
				5.1				
				+63				

59.4	59.2	57.2	58.0	1159.0	58.1	57.1	62.7	62.6
6.9	7.1	9.1	8.3	7.3	8.2	9.2	3.6	3.7
25	14.9	12.7	10.9	15.4	6.9	8.9	15.7	25
55.2	55.1					54.4	54.8	
11.1	11.2					11.9	11.5	
25	16			15.5		17.1	25	

1166.29

BS	HI	FS.	Elev.
0.460	1154.80 ✓	11.954	1154.34
0.498	1143.50 ✓	11.80	1148.00
0.062	1131.96 ✓	11.60	1131.90
0.283	1122.14 ✓	10.100	1121.86.
		3.465	+.13

BM #11
12.55

HI = 1154.8

51.5 / 3.3 / 11.5 — 1151.9 / 2.9 / 155 — 51.3 / 3.5 / 8.9 — 50.5 / 4.3 / 10.9 — 51.3 / 3.5 / 11.5

level: 50.3 / 4.5 / 23 — 49.5 / 5.3 / 18.7 — 42.8 / 12.0 / 8.5 — 43.7 / 11.1 / 6.5 — 1144.4 / 10.4 / 156 / 1141.2 / 12.6 / +25 — 43.9 / 10.9 / 9.4 — 43.0 / 11.8 / 11.3 — 47.6 / 7.2 / 16.5 — 48.2 / 6.6 / 25 level

---

HI = 1143.5

41.9 / 1.6 / 29.5 — 40.6 / 2.9 / 19.2 — 31.1 / 12.4 / 6.7 — 32.0 / 11.5 / 4.9 — 1132.3 / 11.2 / 157 — 31.9 / 11.6 / 7.0 — 31.3 / 12.2 / 8.5 — 37.1 / 6.4 / 14.5 — 39.4 / 4.1 +1" in 10' / 20.5

HI = 1132.0

26.8 / 5.2 / 25 f — 22.6 / 9.4 / 12.2 — 20.7 / 11.3 / 10.9 — 22.1 / 9.9 / 8.5 — 1122.5 / 9.5 / 158 — 21.8 / 10.2 / 6.8 — 20.7 / 11.3 / 8.9 — 22.4 / 9.6 / 10.0 — 27.6 / 4.4 / 21.9 level

---

HI = 1122.1

17.3 / 4.8 / 23 f — 17.8 / 4.3 / 11.8 — 17.0 / 5.1 / 10.6 — 18.0 / 4.1 / 8.7 — 1118.8 / 3.3 / 159+00 — 17.5 / 4.6 / 9.3 — 16.7 / 5.4 / 11.8 — 17.9 / 4.2 / 13 level

14.1 / 8.0 / 22.0 f — 15.5 / 6.6 / 10.9 — 14.8 / 7.3 / 10.3 — 15.5 / 6.6 / 8.2 — 1116.1 / 6.0 / 160 — 15.4 / 6.7 / 8.0 — 14.5 / 7.6 / 10.0 — 15.2 / 6.9 / 108 — 14.7 / 7.4 / 25.7 f

13.1 / 9.0 / 20.5 f level — 13.8 / 8.3 / 8.9 — 13.2 / 8.9 / 8.3 — 13.9 / 8.2 / 6.0 — 1114.3 / 7.8 / 161 — 14.1 / 8.0 / 10.4 — 13.5 / 8.6 / 12.3 — 14.0 / 8.1 / 13.7 — 13.6 / 8.5 / 30.0 f.

13.0 / 9.1 / 21.0 f — Rd / 6.0 — 1114.2 / 7.9 / 162 — / 12.7 — 13.9 / 8.2 / 289 f

1118.6 / 3.5 / ℄ Bridge floor.

1122.14

7.510	1126.19 ✓	3.465	1118.68
10.698	1135.95 ✓	0.942	1125.25
11.853	1146.73 ✓	1.070	1134.88
10.835	1156.15 ✓	1.41.8	1145.32

1109.6
12.5 Elev. low water
1107.6
14.5 x bottom of creek N. side of Br.

HI = 1126.2

x 9.06 x 9.00 top of E abutment

x 8.63 x 8.72

19.7 17.3 20.9 1121.0 21.1 17.5
name slope up. 6.5 8.9 5.3 5.2 5.1 8.7 level
f 25.4 16.6 6.3 164 10.9 22.9 f
+10 abrupt

+I 1136.0

35.8 26.7 27.8 1128.7 28.3 26.5 35.0
0.2 9.3 8.2 7.3 7.7 9.5 f 1.0 -1 in 10'
f 25 8.3 5.6 165 8.0 11.5 21.2 24.0

+II 1146.7

1139.8 39.1 37.9 46.5
43.1 39.3 39.7 6.9 7.6 8.8 0.2 -1 in 5'
3.6 7.4 7.0
+ 29.5 13.8 6.9 5.4 166 6.9 9.9 19.5 f

HI = 1156.2

1146.2 46.1 44.9 47.6 48.2
56.2 54.4 45.1 46.2 10.0 10.1 11.3 8.6 8.0 -1 in 5'
20 1.8 11.1 10.0
f 29.5 18.9 9.9 8.0 167 7.8 9.7 12.3 19.0

52.4 51.7
+1 in 10' 3.8 4.5
33 25

166

49.2
level 7.0
45.0

165
1142.7
13.5
166+20

1152.4 51.8 50.8 52.4 52.4
53.1 50.9 52.0 3.8 4.4 5.4 3.8 3.8
3.1 5.3 4.7
f 28.9 13.9 11.8 9.8 168 6.8 9.0 10.4 20

	FS		
	1156.15		
9.918	1165.27 ✓	0.802	1155.35
8.502	1173.34 ✓	0.430	1164.84
11.870	1184.48 ✓	0.724	1172.61
		1.092	(1183.39)

Sta 176+60

#12 B.M. Spike 30" white Ash. opposite Greene

HI = 1156.2

55.9 55.9 53.7 54.3 1155.0 54.5 53.4
0.3 0.3 2.5 1.9 1.2 1.7 2.8
25 15.5 12.9 11.0 16.9 5.0 7.7

HI = 1165.3

1156.2 1157.3
9.1 8.0
10.9 20

56.8
8.5
28.9 level

16.9
16.8

60.0 60.1 57.2 58.3 1158.5 57.6 57.0 61.2
5.3 5.2 8.1 7.0 6.8 7.7 8.3 4.1 level
25 15.7 11.9 10.0 17.0 5.9 8.5 14.5

62.1 62.5 60.7 61.4 1162.4 61.2 62.6 64.7
3.2 2.8 4.6 3.9 2.9 4.1 2.7 0.6 +1' in 10'
25 12.9 11.3 9.2 17.1 8.3 10.2 16.7

HI = 1173.3

63.8 64.1 62.8 63.8 1164.6 63.9 63.0 64.3
9.5 9.2 10.5 9.5 8.7 9.4 10.3 9.0 +1' in 10'
25 11.8 9.5 7.8 17.2 10.7 12.8 14.0

65.4 66.0 65.3 66.0 1166.6 65.7 64.6 66.7 67.7
7.9 7.3 8.0 7.3 6.7 7.6 8.7 6.6 5.6
25 10.4 9.3 7.5 17.3 11.6 13.9 14.9 25

66.9 67.8 67.3 68.2 1168.8 68.1 67.1 68.8
6.4 5.5 6.0 5.1 4.5 5.2 6.2 4.5 level
25 10.9 9.9 8.0 17.4 10.9 12.9 14.6

70.3 71.0 70.3 70.8 1171.8 71.0 70.1 71.3
3.0 2.3 3.0 2.5 1.5 2.3 3.2 2.0 level
25 11.3 10.0 8.2 17.5 7.9 10.0 11.3

HI = 1184.5

76.8 77.0 75.4 76.3 1177.1 76.6 75.6 77.3 81.7
7.7 7.5 9.1 8.2 7.4 7.9 8.9 7.2 2.8
25 13.3 11.7 9.7 17.6 6.4 8.6 10.3 35

May 27, 21
McClellan
Warren
Waller

Clear - Warm -
Rained one-half hour.

BS	HI	FS	Elev	
3.649	1187.04 ✓		1183.39	#12 BM
0.278	1175.72 ✓	11.600	1175.44	
1.022	1165.04 ✓	11.702	1164.02	
		2.42	1162.62	#13 BM N. Side Rd 182+25 24" Maple

HI = 1187.0

1182.4
4.6
176+60

84.8 2.2 25 | 83.2 3.8 7.7 | 1183.6 3.4 177 | 83.8 3.2 9.8 | 85.1 1.9 25 in driveway no pipe

1183.1
3.9
177+38

83.4 3.6 25 level | 79.8 7.2 7.3 drive, no ditch | 1179.5 7.5 178 | 79.1 7.9 12.0 | 78.1 8.9 13.7 | 79.5 7.5 15.6 | 82.3 4.7 20.7 level

HI = 1175.7

1177.0 — 19.0 | 1177.0 — 16.6 | 75.7 0. | 68.7 7.0 7.4 | 69.7 6.0 5.7 | 1170.5 5.2 179 | 70.0 5.7 11.0 | 68.8 6.9 13.2 | 70.1 5.6 14.4 | 73.5 2.2 23 level

HI = 1165.0

1166.4 — 29

62.5 2.5 17.6 level | 62.7 2.3 12.9 | 62.2 2.8 11.9 | 62.8 2.2 9.6 | 1163.2 1.8 180 | 62.7 2.3 8.7 | 61.9 3.1 10.8 | 62.4 2.6 11.5 | 63.3 1.7 23.9 f level

30

58.5 6.5 30.6 +1 in 10' f | 57.4 7.6 25 | 60.0 5.0 19.1 | 60.4 4.6 10.7 | 1160.3 4.7 188 | 60.0 5.0 6.0 | 57.0 8.0 22.0 f level

4 stones fill

1160.3 - 4.7 Rd. & Bridge
1154.3 10.7 low water
53.9 11.1 bottom of cr.

1160.2 SNYDER 59.6 5.4 4.8 64.0 1.0
4.8 [Rd]
181+70 16.8 47.6 100 138
6" C.I. pipe 27.5' long — same slope to 188.

59.3 5.7 31.6 +1 in 10' f | 60.6 4.4 13.0 | 59.6 5.4 11.4 | 60.3 4.7 9.4 | 1160.8 4.2 182 | 59.8 5.2 9.5 | 59.6 5.4 11.1 | 65.0 0 21.4

BS	HI	FS	Elev.
	1165.04 ✓		
11.900	1176.53 ✓	0.410	1164.63
11.934	1188.16 ✓	0.308	1176.22
9.302	1196.44 ✓	1.018	1187.14

4.2

HI = 1165.0

1in5'

64.0 65.0 62.5 61.3 62.0 1162.5 62.1 61.4 1172.3
1.0 0 2.5 3.7 3.0 2.5 2.9 3.6
f 31.6 18.7 12.4 10.9 8.8 182+50 4.4 6.0 23 +1in6'

HI = 1176.5

71.1 71.3 65.3 66.0 1166.4 66.0 66.4 73.7 75.4
5.4 5.2 11.2 10.5 10.1 10.5 11.1 2.8 1.1
f 31.9 22.0 10.3 8.0 183 3.8 6.6 18.3 28.0

74.6 75.6 1175.9 75.5 74.7
1.9 0.9 0.6 1.0 1.8
9.9 7.6 184 4.7 6.2

HI = 1188.2

1in10' 81.5 81.6 81.7 82.4
6.7 6.6 6.5 5.8 level
f 33 20. 184 14.9 26

HI = 1196.4

87.1 87.1 82.9 84.1 1184.6 84.0 83.1 84.4 87.2 87.9
9.3 9.3 13.5 12.3 11.8 12.4 13.3 12.0 9.2 8.2
f 33.3 15.9 8.5 6.0 185 6.6 8.3 9.5 15.2 15

91.9 91.2 87.7 88.7 1189.2 88.6 88.0 89.4 91.1
4.5 5.2 8.7 7.7 7.2 7.8 8.4 7.0 5.3 level
25 12.5 8.0 5.9 186 7.2 8.9 10.0 17.8

93.7 92.4 90.9 91.7 1192.1 91.7 91.0 92.2 93.0
2.7 4.0 5.5 4.7 4.3 4.7 5.4 4.2 3.4 level
25 11 9.7 7.5 187 6.0 8.0 9.4 18.6

1193.0
3.4
187+35

92.9 91.9 90.6 91.2 1191.4 90.9 90.3 90.9 91.2
3.5 4.5 5.8 5.2 5.0 5.5 6.1 5.5 5.2
25 10.9 9.5 9.6 188 7.3 8.9 9.9 20

91.8 89.9 88.6 89.6 1190.4 89.8 89.0 90.1 89.4
4.6 6.5 7.8 6.8 6.0 6.6 7.4 6.3 7.0
25 12.8 11.2 9.0 189 4.9 6.9 8.2 20.0

BS	HI	F.S.	Elev.	
	1196.44 ✓			
6.085	1199.53 ✓	2.920	1193.52	T.P. #14
		4.550	1194.98	Stone B.M. in. Silvernail's driveway North part.
1191.9	7.6	Rd. at ℄ Culvert Pipe		
1189.8	9.7	Bottom of pipe discharge across field to right		

Point 6.2' N. of fence line prolonged

HI = 1196.4

91.4	89.4	86.9	87.4	1187.3	86.7	86.0	87.6	87.6
5.0	7.0	9.5	9.0	9.1	9.7	10.4	8.8	8.8
29	25	11.9	9.8	190	4.7	6.4	8.0	20.8 f

85.7	84.7	85.3	1185.6	85.0	84.4	84.9	82.4
10.7	11.7	11.1	10.8	11.4	12.0	11.5	14.0
25	14.6	11.9	191	5.0	6.9	8.3	22.4 f

1186.0 - 10.4 ℄ Culvert
1181.9 - 14.5 bottom of ditch

90.1	88.0	86.4	87.2	1187.7	87.2	86.4	89.1	91.6
6.3	8.4	10.0	9.2	8.7	9.2	10.0	7.3	4.8 level
25	14.8	12.9	10.9	192	3.9	5.5	8.8	20

95.6	95.3	92.4	93.0	1193.6	93.3	92.4	93.7	94.5
0.8	1.1	4.0	3.4	2.8	3.1	4.0	2.7	1.9
25	13.5	9.0	6.9	193	7.2	8.9	11.9	23.9

HI = 1199.5

93.7	94.0	92.6	91.2	91.9	1192.1	91.4	91.1	93.1	94.0
5.8	5.5	6.9	8.3	7.6	7.4	8.1	8.4	6.4	5.5
25	12.5	9.0	8.2	6.0	194	10.6	11.9	13.2	24 f

91.2	91.6	90.0	91.0	1191.6	90.7	89.8	91.0	91.3
8.3	7.9	9.5	8.5	7.9	8.8	9.7	8.5	8.2
25	12.4	10.3	7.9	195	9.9	11.9	13.2	24.6 f

91.7	90.5	91.3	1192.4	91.3	90.5	91.5	90.9
7.8	9.0	8.2	7.1	8.2	9.0	8.0	8.6
25	10.6	8.1	196	8.9	10.9	12.3	24 f

93.0	91.8	92.5	1193.2	92.6	91.8	93.0	92.1
6.5	7.7	7.0	6.3	6.9	7.7	6.5	7.4
level 8.0	6.9	4.5	197	8.9	10.5	11.9	25 f

94.2	93.1	93.8	1194.7	94.0	93.1	94.1	94.3
5.3	6.4	5.7	4.8	5.5	6.4	6.4	5.2
level 8.4	7.4	5.4	198	8.2	10.3	11.3	24.5 f

BS	HI	FS	Elev.
	1199.53 ✓		
11.913	1210.64 ✓	0.800	1198.73
10.878	1221.20 ✓	0.318	1210.33
11.174	1231.59 ✓	0.783	1220.42

HI = 1199.5

		95.6	94.5	95.4	1195.9	95.4	94.7	95.6	95.8
level		3.9	5.0	4.1	3.6	4.1	4.8	3.9	3.7
		9.7	8.4	5.0	199	6.3	8.3	9.8	23.9 f
99.0	97.4	95.8	96.7	1197.7	97.1	96.3	97.8		
0.5	2.1	3.7	2.8	1.8	2.4	3.2	1.7		
25	10.3	8.9	6.9	200	6.0	8.0	9.7	23.9	f

HI = 1210.6

01.9	99.4	98.0	99.0	1200.0	99.3	98.4	00.5	02.2	
8.7	11.2	12.6	11.6	10.6	11.3	12.2	10.1	8.4	
25	10.8	9.1	6.9	201	6.5	8.8	10.8	23.5	f
04.7	02.6	00.5	01.6	1202.6	02.1	01.3	03.1	04.1	
5.9	8.0	10.1	9.0	8.0	8.5	9.3	7.5	6.5	
25	10.9	9.1	6.5	202	6.7	8.8	11.1	23.9	f
07.9	05.9	03.8	05.2	1206.0	05.4	04.5	06.5		
3.7	4.7	6.8	5.4	4.6	5.2	6.1	4.1		level
25	11.3	9.5	7.2	203	6.5	8.6	10.8		
	09.7	07.9	08.9	1209.4	08.6	07.5	09.2		
level	0.9	2.7	1.7	1.2	2.0	3.1	1.4		level
	11.9	9.9	7.7	204	6.0	8.1	10.6		

HI = 1221.2

13.6	12.8	11.1	12.1	1212.9	11.7	10.8	12.9		
7.6	8.4	10.1	9.1	8.3	9.5	10.4	8.3		level
25	13.5	11.5	9.5	205	7.4	9.3	12.7		
18.3	17.2	15.3	16.1	1216.8	16.0	15.0	17.4		
2.9	4.0	5.9	5.1	4.4	5.2	6.2	3.8		level
25	14.8	11.9	10.2	206	6.6	8.3	11.2		

HI = 1231.6

24.3	22.0	20.3	21.2	1221.6	20.9	19.9	22.7	23.3	
7.3	9.6	11.3	10.4	10.0	10.7	11.7	8.9	8.3	
25	12.4	9.9	8.0	207	5.9	7.8	10.8	25	

BS	HI	FS	Elev.
	1231.59 ✓		
5.75	1236.10 ✓	1.24	1230.35
		3.695	1232.41

Nail in East root of 36" Maple
Sta 208 N. side of rd.
#15

0.300	1224.44 ✓	11.962	1224.14

HI = 1231.6

28.6	26.8	25.6	24.6	25.2	12255	25.4	24.6	26.2	27.9
3.0	4.8	6.0	7.0	6.4	6.1	6.2	7.0	5.4	3.7
25	17.9	11.9	10.9	8.9	207+50	6.6	8.0	9.8	25

31.6	28.8	27.2	28.2	1228.9	28.8	28.4	29.5	30.8
0.0	2.8	4.4	3.4	2.7	2.8	3.2	2.1	0.8
25	10.7	9.0	6.8	208	8.6	10.0	11.9	25

HI = 1236.1

33.3	31.1	1231.6		31.6	31.1	33.5	
2.8	5.0	4.5		4.5	5.0	2.6	level
25	10.8	208+50	1232.5	8.0	9.8	14.4	
			3.6				
			+75				

33.0	32.9	30.4	31.2	1231.7	31.5	33.1	
3.1	3.2	5.7	4.9	4.4	4.6	3.0	
25	12.9	9.8	7.4	209	7.8	25	in drive.

1229.5
6.6
+50

	29.9	27.2	25.6	26.6	1227.4	26.5	25.7	28.2	29.2
	6.2	8.9	10.5	9.5	8.7	9.6	10.4	7.9	6.9
level			11.2	9.2	210	8.2	10.1	13.3	25
f	19.9	12.3							

HI = 1224.4

		23.9	20.0	21.0	1221.7	21.2	20.2	22.8	
level		+0.5	4.4	3.4	2.7	3.2	4.2	1.6	+1 in C"
f	18.2		10.2	8.3	211	7.9	9.7	11.9	

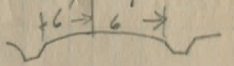
	18.8	17.4	16.4	17.2	1217.9	16.9	16.3	18.5	19.6
	5.6	7.0	8.0	7.2	6.5	7.5	8.1	5.9	4.8
level			9.7	7.8	212	7.4	9.0	12.8	25
f	17.0	10.7							

	14.9	15.2	14.5	15.3	1215.9	15.0	14.3	16.4	14.8
	9.5	9.2	9.9	9.1	8.5	9.4	10.6	9.0	9.6
	23.5	12.0	10.4	8.0	213	8.7	10.5	11.7	25

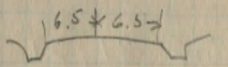
H. I

122+44 ✓

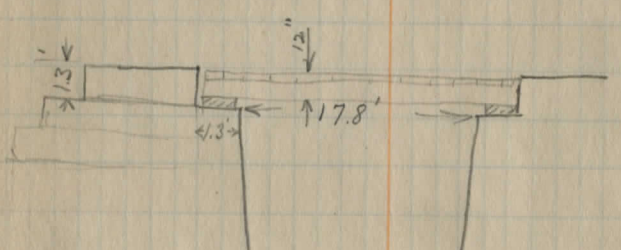
1214.6
9.8
214

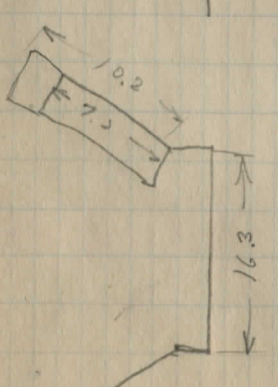


1213.6
10.8
215



211+50 17' →





BRIDGE Sta 163.

May 28, 21
{ McClellan
Warren 1 day
Waller 1 day

Clear - morning
Rained - afternoon
by spells.

Topography

May 31, '21
{ McClellan
Waller

Clear - warm.

Topography.

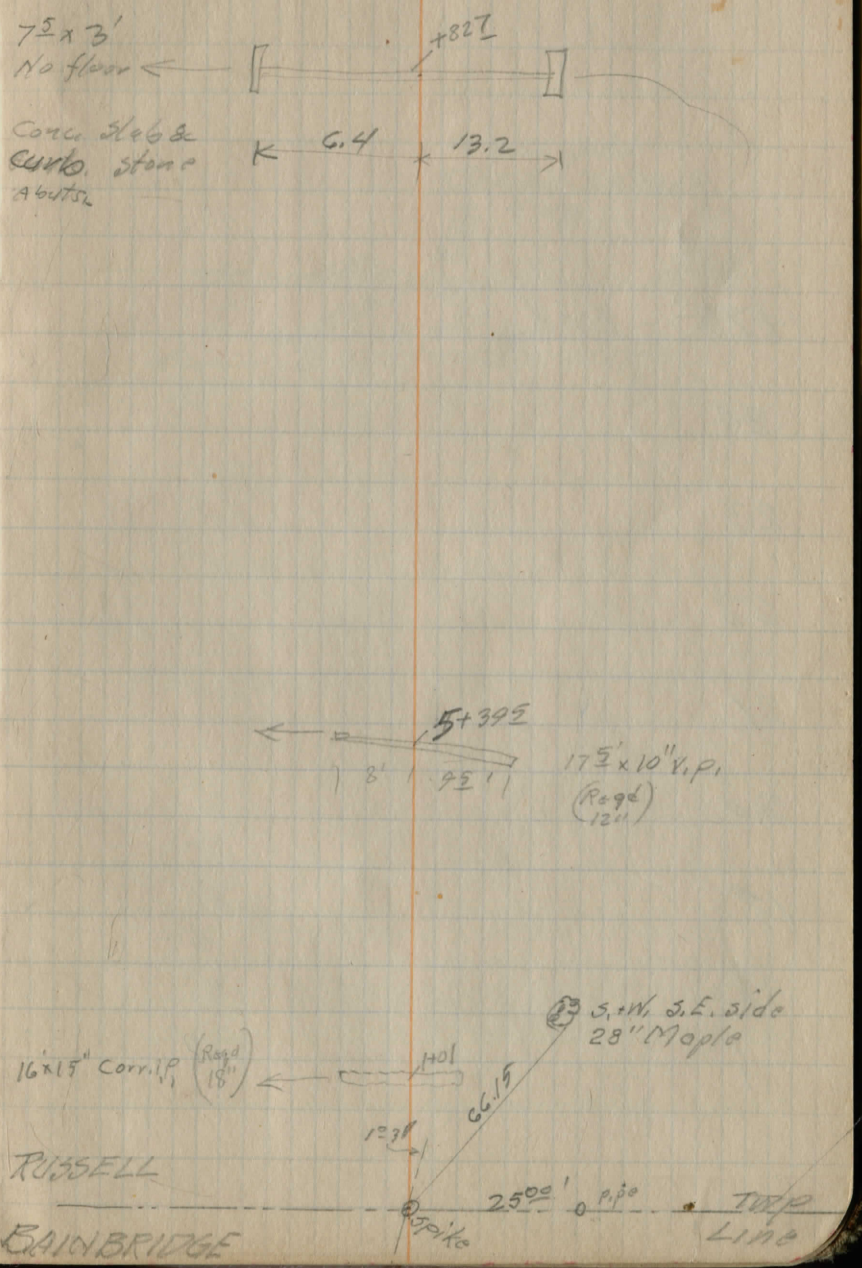
4-19-30

SURVEY OF McKINLEY AVE

Sta.	Angle	Bearing
15		
14		
13		
12		
11		
10		
9		
8		
7		
6		
5	— Tang —	
4		
3		
2		
1		

0+00 ∆ 1°-03' Lt.

14th and (Haskins or) Snyder = 5th Russell Village ℄



+75° End

24

23

22

21

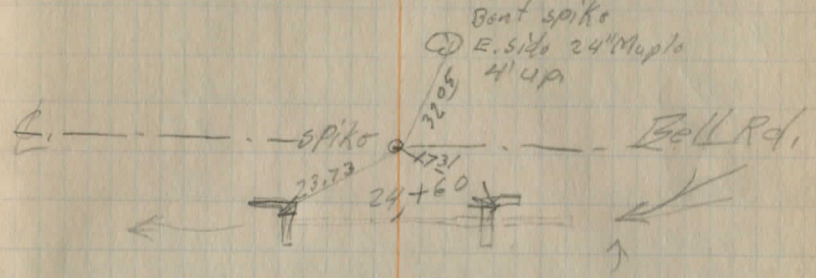
20

19

18

17

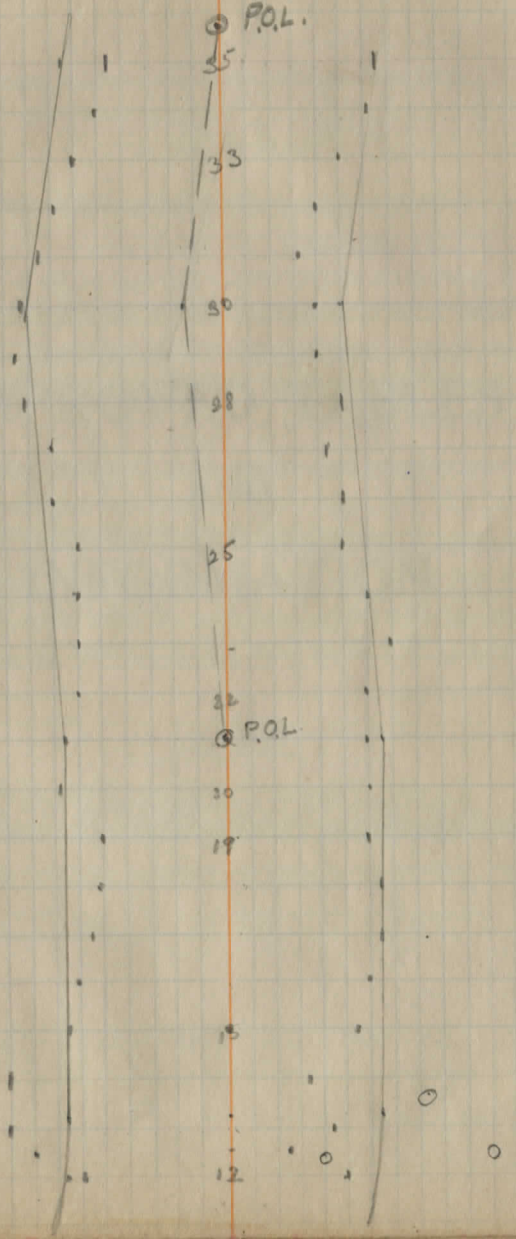
16



McKinley Ave SNYDER
Profile

B.M.	8.53	1171	15		1162.62	B.M. #13 Bell Rd. Survey 24" Maple Lk 1822 & Bell Rd. PER PAGE 64
24+75				8.3		
+50				8.9		
24+00				8.4		
+65				5.6		
+35				4.8		
23+00				7.0		
22+00				11.7		
T.P.	0.60	1158.94		12.81	1158.34	
21+00				4.0		
20+00				8.0		
19+00				12.5		
T.P.	1.95	1148	18	12.71	1146.23	
18+00				7.8		
17+00				13.2		
T.P.	10.84	1145	89	13.13	1135.05	
16+00				12.5		
15+82				12.6		Top conc. floor of Bridge
				11.00		" Rt. Curb.
				13.6		Bottom Conc slab floor
				16.4		" Creek
15+00				12.5		
14+00				11.3		
13+00				8.4		
12+00				5.0		

		1145	89			
11+00				1.2		
T.P.	12.19	1157	70	0.38	1145.51	
10				7.8		
9				0.7		
T.P.	11.37	1168	41	0.66	1157.04	
8				6.7		
7				1.4		
T.P.	11.85	1180	04	0.22	1168.19	
6				8.9		
5+39				7.1		East pipe.
5				6.2		
4				0.9		
T.P.	12.75	1192	69	0.10	1179.94	
4+50				16.6		
3				7.8		
2				2.7		
1+01				0.6		E Culvt.
1+00				0.6		
T.P.	10.00	1202.54		0.15	1192.54	
0+25				7.6		
0+00				6.1		
0-25				4.3		
-50				3.5		
-100				2.1		
B.M.				2.38	1200.16	Spike & Washer S.E. side 28" Maple used as Ref. to 1+10


P.O.L.
35
33
30
28
25
22
P.O.L.
20
18
15
12

IMPROVED TABLES

AND

INFORMATION

DIRECTIONS FOR USE OF TABLES

TABLE No. 1.

Distance of slope stake from side or shoulder stake for any width roadway, slope 1½ to 1. If ground is nearly level, the cut or fill at side stake is located by the double entry method in left column and top row. The number in body of table in same row and column gives distance from side stake to slope stake. If ground is not level estimate the difference in elevation between the side stake and slope stake, lower target by this amount if cut, elevate if fill. Add this amount to cut or fill and find distance in table. Set up rod at this point, and line of sight should cut target. If it does not make the slight adjustment necessary.

TABLE No. 9.

To find Tangent and External for curve of any other degree, divide by degree of curve and add correction found in column of corrections.

Degree of curve with a given I may be found by dividing tangent, (or external), opposite I by given tangent, (or external).

The distance from a point on the tangent to the curve is very nearly the square of the tangent length divided by twice the radius.

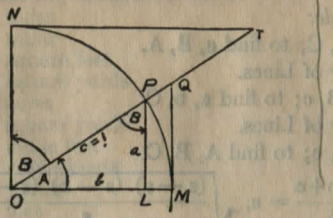


TABLE II

TRIGONOMETRIC FORMULÆ.

$\angle A = \angle MOP \qquad \angle B = \angle PON = \angle OPL$

$R = OB = c = 1$

$$\sin A = \frac{a}{c} = \frac{a}{1} = a = \cos B = LP$$

$$\cos A = \frac{b}{c} = \frac{b}{1} = b = \sin B = OL$$

$$\tan A = \frac{a}{b} = \frac{MQ}{OM} = \frac{MQ}{1} = MQ = \cot B = MQ$$

$$\cot A = \frac{NT}{ON} = \frac{NT}{1} = NT = \tan B = NT$$

$$\sec A = \frac{OQ}{OM} = \frac{OQ}{1} = OQ = \csc B = OQ$$

$$\csc A = \frac{OT}{ON} = \frac{OT}{1} = OT = \sec B = OT$$

$$\text{vers } A = \frac{LM}{OP} = LM = \text{covers } B \#$$

$$\text{covers } A = \frac{OP - LP}{OP} = OP - LP = \text{vers } B$$

$$\text{exsec } A = PQ = \text{coexsec } B$$

$$\text{coexsec } A = PT = \text{exsec } B$$

$$\sin \tfrac{1}{2} A = \sqrt{\frac{1 - \cos A}{2}} \qquad \cos \tfrac{1}{2} A = \sqrt{\frac{1+\cos A}{2}}$$

$$\sin 2A = 2 \sin A \cos A \qquad \cos 2A = \cos^2 A - \sin^2 A$$

$$\text{Law of Lines} \quad \frac{\sin A}{a} = \frac{\sin B}{B} = \frac{\sin C}{C}$$

$$\text{Law of Cosines} \quad c^2 = a^2 + b^2 - 2ab \cos C$$

$$\text{Law of Tangents} \quad \frac{a+b}{a-b} = \frac{\tan \tfrac{1}{2}(A+B)}{\tan \tfrac{1}{2}(A-B)}$$

Table II—Continued
TRIGONOMETRIC FORMULAE (continued)

In any triangle:

Given a, b, C; to find c, B, A.
Use Law of Lines.

Given A, B, c; to find a, b, C.
Use Law of Lines.

Given a, b, c; to find A, B, C.

Let $\frac{a+b+c}{2} = s$, $\sqrt{\frac{(s-a)\ (s-b)\ (s-c)}{s}} = r$

$\cos \frac{1}{2} A = \sqrt{\frac{s(s-a)}{bc}}$

$\tan \frac{1}{2} A = \frac{r}{s-a}$

$\tan \frac{1}{2} B = \frac{r}{s-b}$

$\tan \frac{1}{2} C = \frac{r}{s-c}$

Area of a triangle:

Area $= \frac{1}{2}$ ab Sin C

Area $= \sqrt{s\ (s-a)\ (s-b)\ (s-c)}$

PRISMOIDAL FORMULA.

Vol. $= \frac{h}{6}\ (B+b+4M)$

h = altitude; b, B = bases; M = midsection

Table III
INCHES AND FRACTIONS OF AN INCH IN DECIMALS OF A FOOT

	0	1	2	3	4	5	6	7	8	9	10	11	
1/16	.0052	.0885	.1719	.2552	.3385	.4219	.5052	.5885	.6719	.7552	.8385	.9219	1/16
1/8	.0104	.0938	.1771	.2604	.3438	.4271	.5104	.5938	.6771	.7604	.8438	.9271	1/8
3/16	.0156	.0990	.1823	.2656	.3490	.4323	.5156	.5990	.6823	.7656	.8490	.9323	3/16
1/4	.0208	.1042	.1875	.2708	.3542	.4375	.5208	.6042	.6875	.7708	.8542	.9375	1/4
5/16	.0260	.1094	.1927	.2760	.3594	.4427	.5260	.6094	6927	.7760	.8594	.9427	5/16
3/8	.0313	.1146	.1979	.2813	.3646	.4479	.5313	.6146	.6979	.7813	.8646	.9479	3/8
7/16	.0365	.1198	.2031	.2865	.3698	.4531	.5365	.6198	.7031	.7865	.8698	.9531	7/16
1/2	.0417	.1250	.2083	.2917	.3750	.4583	.5417	.6250	.7083	.7917	.8750	.9583	1/2
9/16	.0469	.1302	.2135	.2969	.3803	.4635	.5469	.6302	.7135	.7969	.8802	.9635	9/16
5/8	.0521	.1354	.2188	.3021	.3854	.4688	.5521	.6354	.7188	.8021	.8854	.9688	5/8
11/16	.0573	.1406	.2240	.3073	.3906	.4740	.5573	.6406	.7240	.8073	.8906	.9740	11/16
3/4	.0625	.1458	.2292	.3125	.3958	.4792	.5625	.6458	.7292	.8125	.8958	.9792	3/4
13/16	.0677	.1510	.2344	.3177	.4010	.4844	.5677	.6510	.7344	.8177	.9010	.9844	13/16
7/8	.0729	.1563	.2396	.3229	.4063	.4896	.5729	.6563	.7396	.8229	.9063	.9896	7/8
15/16	.0781	.1615	.2448	.3281	.4115	.4948	.5781	.6615	.7448	.8281	.9115	.9948	15/16
1	.0833	.1667	.2500	.3333	.4167	.5000	.5833	.6667	.7500	.8333	.9167	1.000	1
	0	1	2	3	4	5	6	7	8	9	10	11	

Table IV
USEFUL RELATIONS.

Lineal feet	×.00019	= miles
Lineal yards	×.0006	= miles
Square inches	×.007	= square feet
Square feet	×.111	= square yards
Square yards	×.0002067	= acres
Acres	×4840	= square yards
Cubic inches	×.00058	= cubic feet
Cubic feet	×.03704	= cubic yards
Links	×.22	= yards
Links	×.66	= feet
Feet	×1.5	= links

360° = 21600′ = 1296000″
Radius = arc of 57.2957790°
Arc of 1° (radius = 1) = .017453292
Arc of 1′ (radius = 1) = .000290888
Arc of 1″ (radius = 1) = .000004848

$\pi = 3.141592654$

$\frac{\pi}{4} = 0.785398163$

$\frac{\pi}{6} = 0.523598776$

$\sqrt{\frac{4}{\pi}} = 1.128379167$

$\frac{\pi}{6} = 0.523598776$

$\frac{4.\pi}{3} = 4.188790205$

$\sqrt{\frac{1}{4}} = 0.564190$

$\sqrt[3]{\frac{6}{\pi}} = 1.240700982$

$\pi^2 = 9.869604401$

$\frac{1}{\pi^2} = 0.101321184$

$\sqrt{\pi} = 1.772453851$

$\frac{1}{\pi} = 0.3183099$

Curvature of Earth's surface = about 0.7 feet in 1 mile
Curvature in feet = 0.667 (Dist. in miles)²
Difference between arc and chord length, 0.05 feet in 11½ miles

Probable error of a single observation $= 0.6754 \sqrt{\frac{M v^2}{n-1}}$

Error in chaining of 0.01 feet in 100 feet:
Due to—

1. Length of tape error of 0.01 feet
2. Alignment. One end 1.4 feet out of line
3. Sag of tape at centre of 0.61 feet.
4. Temperature difference of 15°
5. Difference of pull of 15 lbs.

STADIA REDUCTION FORMULÆ.

Horizontal Distance $= R - R \sin^2 a + C \cos a$
Vertical Distance $= R\ \frac{1}{2} \sin 2a + C \sin a$
R = Reading × $\frac{\text{distance from Object glass to cross hairs}}{\text{distance between cross hairs}}$
C = distance from Object glass to cross hairs + distance from Object glass to center of instrument.
a = angle of elevation for mid Reading

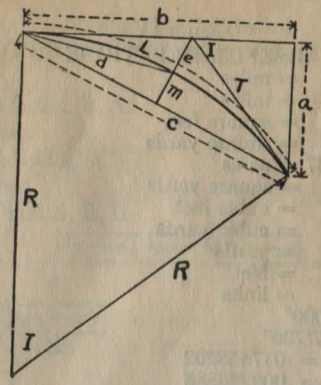


Table V

CURVE FORMULAE FOR SIMPLE CURVES

Compiled by J. Calvin Locke, C.E.

(1) $c = \sqrt{2Ra}$ (2) $c = \sqrt{a^2+b^2}$

(3) $c = \sqrt{2R\,(R-\sqrt{(R+b)\,(R-b)}} = \sqrt{2R(R-\sqrt{R^2-b^2})}$

(4) $c = 2\sqrt{m\,(2R-m)}$

(5) $c = 2R \sin \frac{1}{2} I$ (6) $c = 2T \cos \frac{1}{2} I$

(7) $e = R \operatorname{exsec} \frac{1}{2} I$

(8) $e = R \tan \frac{1}{2} I \tan \frac{1}{4} I$ (9) $e = T \tan \frac{1}{4} I$

(10) $b = \sqrt{a\,(2R-a)}$

(11) $b = \sqrt{\left(c+\frac{c^2}{2R}\right)\left(c-\frac{c^2}{2R}\right)} = \sqrt{c^2-\frac{c^4}{4R^2}}$

(12) $b = R \sin I$ (13) $b = a \cot \frac{1}{2} I$

(14) $R = \frac{a^2+b^2}{2a} = \frac{c^2}{2a}$ (15) $R = \frac{d^2}{2m} = \frac{c^2+4m^2}{8m}$

(16) $d = \sqrt{R\,(2R-\sqrt{(2R+c)\,(2R-c)}} = \sqrt{R(2R-\sqrt{4R^2-c^2})}$

(17) $d = \sqrt{2Rm}$ (18) $d = 2R \sin \frac{1}{4} I$ (19) $m = \frac{d^2}{2R}$

(20) $m = R \mp \sqrt{\left(R+\frac{c}{2}\right)\left(R-\frac{c}{2}\right)} = R \mp \sqrt{R^2-\frac{c^2}{4}}$

(21) $m = R \operatorname{vers} \frac{1}{2} I$ (22) $m = R \sin \frac{1}{2} I \tan \frac{1}{4} I$ (23) $m = \frac{1}{2} c \tan \frac{1}{4} I$

(24) $a = \frac{c^2}{2R}$ (25) $a = R - \sqrt{(R+b)\,(R-b)} = R - \sqrt{R^2-b^2}$

(26) $a = 2\,R\,(\sin^2 \frac{1}{2} I)^2$ (27) $a = R \operatorname{vers} I$ (28) $a = R \sin I \tan \frac{1}{2}$

(29) $a = b \tan \frac{1}{2} I$ (30) $a = T \sin I$ (31) $T = R \tan \frac{1}{2} I$

(32) $I = \frac{L}{R} \times 57.295780$ (33) $R = \frac{L}{I} \times 57.295780$

(34) $L = IR \times 0.01745329$ (35) $L = \frac{8d-c}{3}$

(36) Area Seg. $= \frac{LR - R^2 \operatorname{Sin} I}{2} = \frac{LR - Rb}{2}$

Table VI

SINES, COSINES, TANGENTS, COTANGENTS

deg.	sin 0′	tan 0′	sin 10′	tan 10′	sin 20′	tan 20′	sin 30′	tan 30′	sin 40′	tan 40′	sin 50′	tan 50′	deg.
0	0000	0000	0029	0029	0058	0058	0087	0087	0116	0116	0145	0145	89
1	175	0175	0204	0204	0233	0233	0262	262	291	291	320	320	88
2	349	349	378	378	407	407	436	437	465	466	494	495	87
3	523	524	552	553	581	582	610	612	640	641	669	670	86
4	698	699	727	729	756	758	785	787	814	816	843	846	85
5	872	875	901	904	929	934	958	963	987	992	1016	1022	84
6	1045	1051	1074	1080	1103	1110	1132	1139	1161	1169	190	198	83
7	219	228	248	257	279	287	305	317	334	346	363	376	82
8	392	405	421	435	449	465	478	495	507	524	536	554	81
9	564	584	593	614	622	644	650	673	679	703	708	733	80
10	736	763	765	793	794	823	822	853	851	883	880	914	79
11	908	944	937	974	965	2004	994	2035	2022	2065	2051	2095	78
12	2079	2126	2108	2156	2136	186	2164	217	193	247	221	278	77
13	250	309	278	339	306	370	334	401	363	432	391	462	76
14	419	493	447	524	476	555	504	586	532	617	560	648	75
15	588	679	616	711	644	742	672	773	700	805	728	836	74
16	756	867	784	899	812	931	840	962	868	994	896	3026	73
17	924	3057	952	3089	939	3121	3007	3153	3035	3185	3062	217	72
18	3090	249	3118	281	3145	314	173	346	201	378	228	411	71
19	256	443	283	476	311	508	338	541	365	574	393	607	70
20	420	640	448	673	475	706	502	739	529	772	557	805	69
21	584	839	611	872	638	906	665	939	692	973	719	4006	68
22	746	4040	773	4074	800	4108	827	4142	854	4176	881	210	67
23	907	245	934	279	961	314	987	348	4014	383	4041	417	66
24	4067	452	4094	487	4120	522	4147	557	173	592	200	628	65
25	226	663	253	699	279	734	305	770	331	806	358	841	64
26	384	877	410	913	436	950	4462	986	488	5022	514	5059	63
27	540	5095	566	5132	592	5169	617	5206	643	243	669	280	62
28	695	317	720	354	746	392	772	430	797	467	823	505	61
29	848	543	874	581	899	619	924	658	950	696	975	735	60
30	5000	774	5025	5812	5050	851	5075	890	5100	930	5125	969	59
31	150	6009	175	6048	200	6088	225	6128	250	6168	275	6208	58
32	299	249	324	289	348	330	5373	371	398	412	422	453	57
33	446	494	471	536	495	577	519	619	544	661	568	703	56
34	592	745	616	787	640	830	664	873	688	916	712	959	55
35	736	7002	760	7046	783	7089	807	7133	831	7177	854	7221	54
36	878	265	901	310	925	355	948	400	972	445	995	490	53
37	6018	536	6041	581	6065	627	6088	673	6111	720	6134	766	52
38	157	813	180	860	202	907	225	954	248	8002	271	8050	51
39	293	8098	316	8146	338	8195	361	8243	383	292	406	342	50
40	428	391	450	441	472	491	494	541	517	591	539	642	49
41	561	693	583	744	604	796	626	847	648	899	670	952	48
42	691	9004	713	9057	734	9110	756	9163	777	9217	799	9271	47
43	820	325	841	380	862	435	884	490	905	545	926	601	46
44	947	657	967	713	988	770	7009	827	7030	884	7050	942	45
45	7071	1.0000	7092	1.0058	7112	1.0117	133	1.0176	153	1.0235	173	1.0295	44
deg.	60′ cos	60′ cot	50′ cos	50′ cot	40′ cos	40′ cot	30′ cos	30′ cot	20′ cos	20 cot	10′ cos	10′ cot	deg.

TABLE VI (continued)

SINES, COSINES, TANGENTS, COTANGENTS (continued)

deg.	sin 0′	tan 0′	sin 10′	tan 10′	sin 20′	tan 20′	sin 30′	tan 30′	sin 40′	tan 40′	sin 50′	tan 50′	deg.
46	7193	1.0355	7214	1.0416	7234	1.0477	7254	1.0533	7274	1.0599	7294	1.0661	43
47	314	.0724	333	.0786	353	.0850	373	.0913	392	.0977	412	.1041	42
48	431	.1106	451	.1171	470	.1237	490	.1303	509	.1369	528	.1436	41
49	547	.1504	566	.1571	585	.1640	604	.1708	623	.1778	642	.1847	40
50	660	1.1918	7679	1.1988	7698	1.2059	7716	1.2131	7735	1.2203	7753	1.2276	39
51	771	2349	790	.2423	808	.2497	826	.2572	844	.2647	862	.2723	38
52	880	.2799	898	.2876	916	.2954	934	.3032	951	.3111	969	.3190	37
53	986	.3270	8004	.3351	8021	.3452	8039	.3514	8056	.3597	8073	.3680	36
54	8090	.3764	107	.3848	124	.3934	141	.4019	158	.4106	175	.4193	35
55	192	4281	208	.4370	225	.4460	241	.4550	258	.4641	274	.4733	34
56	290	.4826	307	.4919	323	.5013	339	.5108	355	.5204	371	.5301	33
57	387	.5399	403	.5497	418	.5597	434	.5697	450	.5798	465	.5900	32
58	480	.6003	496	.6107	511	.6212	526	.6319	542	.6426	557	.6534	31
59	572	.6643	587	.6753	601	.6864	616	.6977	631	.7090	646	.7205	30
60	660	1.7321	8675	1.7437	8689	1.7556	8704	1.7675	8718	1.7797	8732	1.7917	29
61	746	.8040	760	.8165	774	.8291	788	.8418	802	.8546	816	.8676	28
62	829	.8807	843	.8940	857	.9074	870	.9210	884	.9347	897	.9486	27
63	910	.9626	923	.9768	936	.9912	949	2.0057	962	2.0204	975	2.0353	26
64	988	2.0503	9001	2.0655	9013	2.0809	9026	.0965	9038	.1123	9051	.1283	25
65	9063	.1445	075	.1609	088	.1775	100	.1943	112	.2113	124	.2286	24
66	135	.2460	147	.2637	159	.2817	171	.2998	182	.3183	194	.3369	23
67	205	.3559	216	.3750	228	.3945	239	.4142	250	.4342	261	.4545	22
68	272	.4751	283	.4960	293	.5172	304	.5386	315	.5605	325	.5826	21
69	336	.6051	346	.6279	356	.6511	367	.6746	377	.6985	387	.7228	20
70	397	2.7475	9407	2.7725	9417	2.7980	9426	2.8239	9436	2.8502	9446	2.8770	19
71	455	.9042	465	.9319	474	.9600	483	.9887	492	3.0178	502	3.0475	18
72	511	3.0777	520	3.1084	528	3.1397	537	3.1716	546	.2041	555	.2371	17
73	563	.2709	572	.3052	580	.3402	588	.3759	596	.4124	605	.4495	16
74	613	.4874	621	.5261	628	.5656	636	.6059	644	.6470	652	.6891	15
75	659	.7321	667	.7760	674	.8208	681	.8657	689	.9136	696	.9617	14
76	703	4.0108	710	4.0611	717	4.1126	724	4.1653	730	4.2193	737	4.2747	13
77	744	.3315	750	.3897	757	4494	763	.5107	769	.5736	775	.6382	12
78	781	.7046	787	.7729	793	.8430	799	.9152	805	.9894	811	5.0658	11
79	816	.1446	822	5.2257	827	5.3093	833	5.3955	838	5.4845	843	.5764	10
80	9848	5.6713	9853	5.7694	9858	5.8708	9863	5.9758	9868	6.0844	9872	6.1970	9
81	877	6.3138	881	6.4348	886	6.5606	890	6.6912	894	.8269	899	.9682	8
82	903	7.1154	907	7.2687	911	7.4287	914	7.5958	918	7.7704	922	7.9530	7
83	925	8.1443	929	8.3450	932	8.5555	936	8.7769	939	9.0098	942	9.2553	6
84	945	9.5144	948	9.7882	951	10.078	954	10.385	957	10.711	959	11.059	5
85	962	11.430	964	11.826	967	12.250	969	12.706	971	13.197	974	13.727	4
86	976	14.300	978	14.924	980	15.605	981	16.350	983	17.169	985	18.075	3
87	986	19.081	988	20.206	989	21.470	990	22.903	992	24.542	993	26.432	2
88	994	28.636	9995	31.242	9996	34 368	997	38.189	997	42.964	9998	49.104	1
89	9998	57.290	9999	68.750	9999	85.940	9999	114.58	1.000	171.88	1.000	343.77	0
deg.	60′ cos	60′ cot	50′ cos	50′ cot	40′ cos	40′ cot	30′ cos	30′ cot	20′ cos	30′ cot	10′ cos	10′ cot	deg.

TABLE VII

RODS IN FEET AND INCHES

Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches	Rods	Feet Inches
1	16—6	21	346—6	41	676—6	61	1006—6	81	1336—6
2	33—0	22	363—0	42	693—0	62	1023—0	82	1353—0
3	49—6	23	379—6	43	709—6	63	1039—6	83	1369—6
4	66—0	24	396—0	44	726—0	64	1056—0	84	1386—0
5	82—6	25	412—6	45	742—6	65	1072—6	85	1402—6
6	99—0	26	429—0	46	759—0	66	1089—0	86	1419—0
7	115—6	27	445—6	47	775—6	67	1105—6	87	1435—6
8	132—0	28	462—0	48	792—0	68	1122—0	88	1452—0
9	148—6	29	478—6	49	808—6	69	1138—6	89	1468—6
10	165—0	30	495—0	50	825—0	70	1155—0	90	1485—0
11	181—6	31	511—6	51	841—6	71	1171—6	91	1501—6
12	198—0	32	528—0	52	858—0	72	1188—0	92	1518—0
13	214—6	33	544—6	53	874—6	73	1204—6	93	1534—6
14	231—0	34	561—0	54	891—0	74	1221—0	94	1551—0
15	247—6	35	577—6	55	907—6	75	1237—6	95	1567—6
16	264—0	36	594—0	56	924—0	76	1254—0	96	1584—0
17	280—6	37	610—6	57	940—6	77	1270—6	97	1600—6
18	297—0	38	627—0	58	957—0	78	1287—0	98	1617—0
19	313—6	39	643—6	59	973—6	79	1303—6	99	1633—6
20	330—0	40	660—0	60	990—0	80	1320—0	100	1650—0

TABLE VIII

LINKS IN FEET AND INCHES

Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches	Links	Feet Inches
1	0- 7.92	18	11-10.56	35	23- 1.20	52	34- 3.84	69	45- 6.48	86	56- 9.12
2	1- 3.84	19	12- 6.48	36	23- 9.12	53	34-11.76	70	46- 2.40	87	57- 5.04
3	1-11.76	20	13- 2.40	37	24- 5.04	54	35- 7.68	71	46-10.32	88	58- 0.96
4	2- 7.68	21	13-10.32	38	25- 0.96	55	36- 3.60	72	47- 6.24	89	58- 8.88
5	3- 3.60	22	14- 6.24	39	25- 8.88	56	36-11.52	73	48- 2.16	90	59- 4.80
6	3-11.52	23	15- 2.16	40	26- 4.80	57	37- 7.44	74	48-10.08	91	60- 0.72
7	4- 7.44	24	15-10.08	41	27- 0.72	58	38- 3.36	75	49- 6.00	92	60- 8.64
8	5- 3.36	25	16- 6.00	42	27- 8.64	59	38-11.28	76	50- 1.92	93	61- 4.56
9	5-11.28	26	17- 1.92	43	28- 4.56	60	39- 7.20	77	50- 9.84	94	62- 0.48
10	6- 7.20	27	17- 9.84	44	29- 0.48	61	40- 3.12	78	51- 5.76	95	62- 8.40
11	7- 3.12	28	18- 5.76	45	29- 8.40	62	40-11.04	79	52- 1.68	96	63- 4.32
12	7-11.04	29	19- 1.68	46	30- 4.32	63	41- 6.96	80	52- 9.60	97	64- 0.24
13	8- 6.96	30	19- 9.60	47	31- 0.24	64	42- 2.88	81	53- 5.52	98	64- 8.16
14	9- 2.88	31	20- 5.52	48	31- 8.16	65	42-10.80	82	54- 1.44	99	65- 4.08
15	9-10.80	32	21- 1.44	49	32- 4.08	66	43- 6.72	83	54- 9.36	100	66- .000
16	10- 6.72	33	21- 9.36	50	33- 0.00	67	44- 2.64	84	55- 5.28	101	66 -7.92
17	11- 2.64	34	22- 5.28	51	33- 7.92	68	44-10.56	85	56- 1.20	102	67- 3.84

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=10°	I	T	E	I=20°	I	T	E	I=30°
1°	50.00	.218	+	11°	551.70	26.500	+	21°	1061.9	97.577	+
10′	58.34	.297	5° C.	10′	560.11	27.313	5° C	10′	1070.6	99.155	5° C
20′	66.67	.388	T	20′	568.53	28.137	T	20′	1079.2	100.75	T
30′	75.01	.491	.03	30′	576.95	28.974	.06	30′	1087.8	102.35	.10
40′	83.34	.606	E	40′	585.36	29.824	E	40′	1096.4	103.97	E
50′	91.68	.733		50′	593.79	30.686		50′	1105.1	105.60	
2°	100.01	.873	.001	12°	602.21	31.561	.006	22°	1113.7	107.24	.013
10′	108.35	1.024		10′	610.64	32.447		10′	1122.4	108.90	
20′	116.68	1.188		20′	619.07	33.347		20′	1131.0	110.57	
30′	125.02	1.364		30′	627.50	34.259		30′	1139.7	112.25	
40′	133.36	1.552		40′	635.93	35.183		40′	1148.4	113.95	
50′	141.70	1.752		50′	644.37	36.120		50′	1157.0	115.66	
3°	150.04	1.964	10° C.	13°	652.81	37.070	10° C.	23°	1165.7	117.38	10° C.
10′	158.38	2.188	T	10′	661.25	38.031	T	10′	1174.4	119.12	T
20′	166.72	2.425	.06	20′	669.70	39.006	.13	20′	1183.1	120.87	.19
30′	175.06	2.674	E	30′	678.15	39.993	E	30′	1191.8	122.63	E
40′	183.40	2.934	.003	40′	686.60	40.992	.011	40′	1200.5	124.41	.025
50′	191.74	3.207		50′	695.06	42.004		50′	1209.2	126.20	
4°	200.08	3.492		14°	703.51	43.029		24°	1217.9	128.00	
10′	208.43	3.790		10′	711.97	44.066		10′	1226.6	129.82	
20′	216.77	4.099		20′	720.44	45.116		20′	1235.3	131.65	
30′	225.12	4.421		30′	728.90	46.178		30′	1244.0	133.50	
40′	233.47	4.755		40′	737.37	47.253		40′	1252.8	135.35	
50′	241.81	5.100	15° C.	50′	745.85	48.341	15° C.	50′	1261.5	137.23	15° C.
5°	250.16	5.459	T	15°	754.32	49.441	T	25°	1270.2	139.11	T
10′	258.51	5.829	.09	10′	762.80	50.554	.19	10′	1279.0	141.01	.29
20′	266.86	6.211	E	20′	771.29	51.679	E	20′	1287.7	142.93	E
30′	275.21	6.606	.004	30′	779.77	52.818	.017	30′	1296.5	144.85	.038
40′	283.57	7.013		40′	788.26	53.969		40′	1305.3	146.79	
50′	291.92	7.432		50′	796.75	55.132		50′	1314.0	148.75	
6°	300.28	7.863		16°	805.25	56.309		26°	1322.8	150.71	
10′	308.64	8.307		10′	813.75	57.498		10′	1331.6	152.69	
20′	316.99	8.762		20′	822.25	58.699		20′	1340.4	154.69	
30′	325.35	9.230		30′	830.76	59.914		30′	1349.2	156.70	
40′	333.71	9.710	20° C.	40′	839.27	61.141	20° C.	40′	1358.0	158.72	20° C.
50′	342.08	10.202	T	50′	847.78	62.381	T	50′	1366.8	160.76	T
7°	350.44	10.707	.13	17°	856.30	63.634	.26	27°	1375.6	162.81	.39
10′	358.81	11.224	E	10′	864.82	64.900	E	10′	1384.4	164.86	E
20′	367.17	11.753	.006	20′	873.35	66.178	.022	20′	1393.2	166.95	.051
30′	375.54	12.294		30′	881.88	67.470		30′	1402.0	169.04	
40′	383.91	12.847		40′	890.41	68.774		40′	1410.9	171.15	
50′	392.28	13.413		50′	898.95	70.091		50′	1419.7	173.27	
8°	400.66	13.991		18°	907.49	71.421		28°	1428.6	175.41	
10′	409.03	14.582		10′	916.03	72.764		10′	1437.4	177.55	
20′	417.41	15.184	25° C.	20′	924.58	74.119	25° C.	20′	1446.3	179.72	25° C.
30′	425.79	15.799	T	30′	933.13	75.488	T	30′	1455.1	181.89	T
40′	434.17	16.426	.16	40′	941.69	76.869	.32	40′	1464.0	184.08	.49
50′	442.55	17.065	E	50′	950.25	78.264	E	50′	1472.9	186.29	E
9°	450.93	17.717	.007	19°	958.81	79.671	.028	29°	1481.8	188.51	.065
10′	459.32	18.381		10′	967.38	81.092		10′	1490.7	190.74	
20′	467.71	19.058		20′	975.96	82.525		20′	1499.6	192.99	
30′	476.10	19.746		30′	984.53	83.972		30′	1508.5	195.25	
40′	484.49	20.447		40′	993.12	85.431		40′	1517.4	197.53	
50′	492.88	21.161		50′	1001.7	86.904		50′	1526.3	199.82	
10°	501.28	21.887	30° C.	20°	1010.3	88.389	30° C.	30°	1535.3	202.12	30° C.
10′	509.68	22.624	T	10′	1018.9	89.888	T	10′	1544.2	204.44	T
20′	518.08	23.375	.19	20′	1027.5	91.399	.39	20′	1553.1	206.77	.59
30′	526.48	24.138	E	30′	1036.1	92.924	E	30′	1562.1	209.12	E
40′	534.89	24.913	.008	40′	1044.7	94.462	.034	40′	1571.0	211.48	.078
50′	543.29	25.700		50′	1053.3	96.013		50′	1580.0	213.86	

T = R tan ½ I E = R exsec ½ I

TABLE IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=40°	I	T	E	I=50°	I	T	E	I=60°
31°	1589.0	216.3	+	41°	2142.2	387.4	+	51°	2732.9	618.4	+
10′	1598.0	218.7	5° C.	10′	2151.7	390.7	5° C.	10′	2743.1	622.8	5° C.
20′	1606.9	221.1	T	20′	2161.2	394.1	T	20′	2753.4	627.2	T
30′	1615.9	223.5	.13	30′	2170.8	397.4	.17	30′	2763.7	631.7	.21
40′	1624.9	226.0	E	40′	2180.3	400.8	E	40′	2773.9	636.2	E
50′	1633.9	228.4		50′	2189.9	404.2		50′	2784.2	640.7	
32°	1643.0	230.9	.023	42°	2199.4	407.6	.037	52°	2794.5	645.2	.056
10′	1652.0	233.4		10′	2209.0	411.1		10′	2804.9	649.7	
20	1661.0	235.9		20′	2218.6	414.5		20′	2815.2	654.3	
30′	1670.0	238.4		30′	2228.1	418.0		30′	2825.6	658.8	
40′	1679.1	241.0		40′	2237.7	421.4		40′	2835.9	663.4	
50′	1688.1	243.5		50′	2247.3	425.0		50′	2846.3	668.0	
33°	1697.2	246.1	10° C.	43°	2257.0	428.5	10° C.	53°	2856.7	672.7	10° C.
10′	1706.3	248.7	T	10′	2266.6	432.0	T	10′	2867.1	677.3	T
20′	1715.3	251.3	.26	20′	2276.2	435.6	.34	20′	2877.5	682.0	.42
30′	1724.4	253.9	E	30′	2285.9	439.2	E	30′	2888.0	686.7	E
40′	1733.5	256.5	.046	40′	2295.6	442.8	.075	40′	2898.4	691.4	.112
50′	1742.6	259.1		50	2305.2	446.4		50′	2908.9	696.1	
34°	1751.7	261.8		44°	2314.9	450.0		54°	2919.4	700.9	
10′	1760.8	264.5		10′	2324.6	453.6		10′	2929.9	705.7	
20′	1770.0	267.2		20′	2334.3	457.3		20′	2940.4	710.5	
30′	1779.1	269.9		30′	2344.1	461.0		30′	2951.0	715.3	
40′	1788.2	272.6		40′	2353.8	464.6		40′	2961.5	720.1	
50′	1797.4	275.3	15° C.	50′	2363.5	468.4	15° C.	50′	2972.1	725.0	15° C.
35°	1806.6	278.1	T	45°	2373.3	472.1	T	55°	2982.7	729.9	T
10′	1815.7	280.8	.40	10′	2383.1	475.8	.51	10′	2993.3	734.8	.63
20′	1824.9	283.6	E	20′	2392.8	479.6	E	20′	3003.9	739.7	E
30′	1834.1	286.4	.070	30′	2402.6	483.4	.116	30′	3014.5	744.6	.168
40′	1843.3	289.2		40′	2412.4	487.2		40′	3025.2	749.6	
50′	1852.5	292.0		50′	2422.3	491.0		50′	3035.8	754.6	
36°	1861.7	294.9		46°	2432.1	494.8		56°	3046.5	759.6	
10′	1870.9	297.7		10′	2441.9	498.7		10′	3057.2	764.6	
20′	1880.1	300.6		20′	2451.8	502.5		20′	3067.9	769.7	
30′	1889.4	303.5		30′	2461.7	506.4		30′	3078.7	774.7	
40′	1898.6	306.4	20° C.	40′	2471.5	510.3	20° C.	40′	3089.4	779.8	20° C.
50′	1907.9	309.3	T	50′	2481.4	514.3	T	50′	3100.2	784.9	T
37°	1917.1	312.2	.53	47°	2491.3	518.2	.68	57°	3110.9	790.1	.84
10′	1926.4	315.2	E	10′	2501.2	522.2	E	10′	3121.7	795.2	E
20′	1935.7	318.1	.093	20′	2511.2	526.1	.151	20′	3132.6	800.4	.225
30′	1945.0	321.1		30′	2521.1	530.1		30′	3143.4	805.6	
40′	1954.3	324.1		40′	2531.1	534.2		40′	3154.2	810.9	
50′	1963.6	327.1		50′	2541.0	538.2		50′	3165.1	816.1	
38°	1972.9	330.2		48°	2551.0	542.2		58°	3176.0	821.4	
10′	1982.2	333.2		10′	2561.0	546.3		10′	3186.9	826.7	
20′	1991.5	336.3	25° C.	20′	2571.0	550.4	25° C.	20′	3197.8	832.0	25° C.
30′	2000.9	339.3	T	30′	2581.0	554.5	T	30′	3208.8	837.3	T
40′	2010.2	342.4	.67	40′	2591.0	558.6	.85	40′	3219.7	842.7	1.05
50′	2019.6	345.5	E	50′	2601.1	562.8	E	50′	3230.7	848.1	E
39°	2029.0	348.6	.117	49°	2611.2	566.9	.189	59°	3241.7	853.5	.283
10′	2038.4	351.8		10′	2621.2	571.1		10′	3252.7	858.9	
20′	2047.8	354.9		20′	2631.3	575.3		20′	3263.7	864.3	
30′	2057.2	358.1		30′	2641.4	579.5		30′	3274.8	869.8	
40′	2066.6	361.3		40′	2651.5	583.8		40′	3285.8	875.3	
50′	2076.0	364.5		50′	2661.6	588.0		50′	3296.9	880.8	
40°	2085.4	367.7	30° C.	50°	2671.8	592.3	30° C.	60°	3308.0	886.4	30° C.
10′	2094.9	371.0	T	10′	2681.9	596.6	T	10′	3319.1	892.0	T
20′	2104.3	374.2	.80	20′	2692.1	600.9	1.02	20′	3330.3	897.5	1.27
30′	2113.8	377.5	E	30′	2702.3	605.3	E	30′	3341.4	903.2	E
40′	2123.3	380.8	.141	40′	2712.5	609.6	.227	40′	3352.6	908.8	.340
50′	2132.7	384.1		50′	2722.7	614.0		50′	3363.8	914.5	

T = R tan ½ I E = R exsec ½ I

Table IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=70°	I	T	E	I=80°	I	T	E	I=90°
61°	3375.0	920.2		71°	4086.9	1308.2		81°	4893.6	1805.3	
10′	3386.3	925.9	+	10′	4099.5	1315.6	+	10′	4908.0	1814.7	+
20′	3397.5	931.6	5° C.	20′	4112.1	1322.9	5° C.	20′	4922.5	1824.1	5° C.
30′	3408.8	937.3	T	30′	4124.8	1330.3	T	30′	4937.0	1833.6	T
40′	3420.1	943.1	.25	40′	4137.4	1337.7	.30	40′	4951.5	1843.1	.36
50′	3431.4	948.9	E	50′	4150.1	1345.1	E	50′	4966.1	1852.6	E
62°	3442.7	954.8	.080	72°	4162.8	1352.6	.110	82°	4980.7	1862.2	.149
10′	3454.1	960.6		10′	4175.6	1360.1		10′	4995.4	1871.8	
20′	3465.4	966.5		20′	4188.5	1367.6		20′	5010.0	1881.5	
30′	3476.8	972.4		30′	4201.2	1375.2		30′	5024.8	1891.2	
40′	3488.3	978.3		40′	4214.0	1382.8		40′	5039.5	1900.9	
50′	3499.7	984.3		50′	4226.8	1390.4		50′	5054.3	1910.7	
63°	3511.1	990.2	10° C.	73°	4239.7	1398.0	10° C.	83°	5069.2	1920.5	10° C.
10′	3522.6	996.2	T	10′	4252.6	1405.7	T	10′	5084.0	1930.4	T
20′	3534.1	1002.3	.51	20′	4265.6	1413.5	.61	20′	5099.0	1940.3	.72
30′	3545.6	1008.3	E	30′	4278.5	1421.2	E	30′	5113.9	1950.3	E
40′	3557.2	1014.4	.159	40′	4291.5	1429.0	.220	40′	5128.9	1960.2	.299
50′	3568.7	1020.5		50′	4304.6	1436.8		50′	5143.9	1970.3	
64°	3580.3	1026.6		74°	4317.6	1444.6		84°	5159.0	1980.4	
10′	3591.9	1032.8		10′	4330.7	1452.5		10′	5174.1	1990.5	
20′	3603.5	1039.0		20′	4343.8	1460.4		20′	5189.3	2000.6	
30′	3615.1	1045.2		30′	4356.9	1468.4		30′	5204.4	2010.8	
40′	3626.8	1051.4		40′	4370.1	1476.4		40′	5219.7	2021.1	
50′	3638.5	1057.7	15° C.	50′	4383.3	1484.4	15° C.	50′	5234.9	2031.4	15° C.
65°	3650.2	1063.9	T	75°	4396.5	1492.4	T	85°	5250.3	2041.7	T
10′	3661.9	1070.2	.76	10′	4409.8	1500.5	.91	10′	5265.6	2052.1	1.09
20′	3673.7	1076.6	E	20′	4423.1	1508.6	E	20′	5281.0	2062.5	E
30′	3685.4	1082.9	.240	30′	4436.4	1516.7	.332	30′	5296.4	2073.0	.450
40′	3697.2	1089.3		40′	4449.7	1524.9		40′	5311.9	2083.5	
50′	3709.0	1095.7		50′	4463.1	1533.1		50′	5327.4	2094.1	
66°	3720.9	1102.2		76°	4476.5	1541.4		86°	5343.0	2104.7	
10′	3732.7	1108.6		10′	4489.9	1549.7		10′	5358.6	2115.3	
20′	3744.6	1115.1		20′	4503.4	1558.0		20′	5374.2	2126.0	
30′	3756.5	1121.7		30′	4516.9	1566.3		30′	5389.9	2136.7	
40′	3768.5	1128.2	20° C.	40′	4530.4	1574.7	20° C.	40′	5405.6	2147.5	20° C.
50′	3780.4	1134.8	T	50′	4544.0	1583.1	T	50′	5421.4	2158.4	T
67°	3792.4	1141.4	1.02	77°	4557.6	1591.6	1.22	87°	5437.2	2169.2	1.45
10′	3804.4	1148.0	E	10′	4571.2	1600.1	E	10′	5453.1	2180.2	E
20′	3816.4	1154.7	.321	20′	4584.8	1608.6	.445	20′	5469.0	2191.1	.603
30′	3828.4	1161.3		30′	4598.5	1617.1		30′	5484.9	2202.2	
40′	3840.5	1168.1		40′	4612.2	1625.7		40′	5500.9	2213.2	
50′	3852.6	1174.8		50′	4626.0	1634.4		50′	5517.0	2224.3	
68°	3864.7	1181.6		78°	4639.8	1643.0		88°	5533.1	2235.5	
10′	3876.8	1188.4		10	4653.6	1651.7		10′	5549.2	2246.7	
20′	3889.0	1195.2	25° C.	20′	4667.4	1660.5	25° C.	20′	5565.4	2258.0	25° C.
30	3901.2	1202.0	T	30′	4681.3	1669.2	T	30′	5581.6	2269.3	T
40′	3913.4	1208.9	1.28	40′	4695.2	1678.1	1.53	40′	5597.8	2280.6	1.83
50′	3925.6	1215.8	E	50′	4709.2	1686.9	E	50′	5614.2	2292.0	E
69°	3937.9	1222.7	.403	79°	4723.2	1695.8	.558	89°	5630.5	2303.5	.756
10′	3950.2	1229.7		10′	4737.2	1704.7		10′	5646.9	2315.0	
20′	3962.5	1236.7		20′	4751.2	1713.7		20′	5663.4	2326.6	
30′	3974.8	1243.7		30′	4765.3	1722.7		30′	5679.9	2338.2	
40′	3987.2	1250.8		40′	4779.4	1731.7		40′	5696.4	2349.8	
50′	3999.5	1257.9		50′	4793.6	1740.8		50′	5713.0	2361.5	
70°	4011.9	1265.0	30° C.	80°	4807.7	1749.9	30° C.	90°	5729.7	2373.3	30° C.
10′	4024.4	1272.1	T	10′	4822.0	1759.0	T	10′	5746.3	2385.1	T
20′	4036.8	1279.3	1.54	20′	4836.2	1768.2	1.84	20′	5763.1	2397.0	2.20
30′	4049.3	1286.5	E	30′	4850.5	1777.4	E	30′	5779.9	2408.9	E
40′	4061.8	1293.6	.485	40′	4864.8	1786.7	.671	40′	5796.7	2420.9	.910
50′	4074.4	1300.9		50′	4879.2	1796.0		50′	5813.6	2432.9	

T = R tan ½ I E = R exsec ½ I

Table IX. TANGENTS AND EXTERNALS TO A 1° CURVE

I	T	E	I=100°	I	T	E	I=110°	I	T	E	I=120°
91°	5830.5	2444.9		101°	6950.6	3278.1		111°	8336.7	4386.1	
10′	5847.5	2457.1	+	10′	6971.3	3294.1	+	10′	8362.7	4407.6	+
20′	5864.6	2469.3	5° C.	20′	6992.0	3310.1	5° C.	20′	8388.9	4429.2	5° C.
30′	5881.7	2481.5	T	30′	7012.7	3326.1	T	30′	8415.1	4450.9	T
40′	5898.8	2493.8	.43	40′	7033.6	3342.3	.51	40′	8441.5	4472.7	.62
50′	5916.0	2506.1	E	50′	7054.5	3358.5	E	50′	8468.0	4494.6	E
92°	5933.2	2518.5	.200	102°	7075.5	3374.9	.268	112°	8494.6	4516.6	.360
10′	5950.5	2531.0		10′	7096.6	3391.2		10′	8521.3	4538.8	
20′	5967.9	2543.5		20′	7117.8	3407.7		20′	8548.1	4561.1	
30′	5985.3	2556.0		30′	7139.0	3424.3		30′	8575.0	4583.4	
40′	6002.7	2568.6		40′	7160.3	3440.9		40′	8602.1	4606.0	
50′	6020.2	2581.3		50′	7181.7	3457.6		50′	8629.3	4628.6	
93°	6037.8	2594.0	10° C.	103°	7203.2	3474.4	10° C.	113°	8656.6	4651.3	10° C.
10′	6055.4	2606.8	T	10′	7224.7	3491.3	T	10′	8684.0	4674.2	T
20′	6073.1	2619.7	.86	20′	7246.3	3508.2	.103	20′	8711.5	4697.2	1.25
30′	6090.8	2632.6	E	30′	7268.0	3525.2	E	30′	8739.2	4720.3	E
40′	6108.6	2645.5	.401	40′	7289.8	3542.4	.536	40′	8767.0	4743.6	.721
50′	6126.4	2658.5		50′	7311.7	3559.6		50′	8794.9	4766.9	
94°	6144.3	2671.6		104°	7333.6	3576.8		114°	8822.9	4790.4	
10′	6162.2	2684.7		10′	7355.6	3594.2		10′	8851.0	4814.1	
20′	6180.2	2697.9		20′	7377.8	3611.7		20′	8879.3	4837.8	
30′	6198.3	2711.2		30′	7399.9	3629.2		30′	8907.7	4861.7	
40′	6216.4	2724.5		40′	7422.2	3646.8		40′	8936.3	4885.7	
50′	6234.6	2737.9	15° C.	50′	7444.6	3664.5	15° C.	50′	8965.0	4909.9	15° C.
95°	6252.8	2751.3	T	105°	7467.0	3682.3	T	115°	8993.8	4934.1	T
10′	6271.1	2764.8	1.30	10′	7489.6	3700.2	1.56	10′	9022.7	4958.6	1.93
20′	6289.4	2778.3	E	20′	7512.2	3718.2	E	20′	9051.7	4983.1	E
30′	6307.9	2792.0	.604	30′	7534.9	3736.2	.806	30′	9080.9	5007.8	1.09
40′	6326.3	2805.6		40′	7557.7	3754.4		40′	9110.3	5032.6	
50′	6344.8	2819.4		50′	7580.5	3772.6		50′	9139.8	5057.6	
96°	6363.4	2833.2		106°	7603.5	3791.0		116°	9169.4	5082.7	
10′	6382.1	2847.0		10′	7626.6	3809.4		10′	9199.1	5107.9	
20′	6400.8	2861.0		20′	7649.7	3827.9		20′	9229.0	5133.3	
30′	6419.5	2875.0		30′	7672.9	3846.5		30′	9259.0	5158.8	
40′	6438.4	2889.0	20° C.	40′	7696.3	3865.2	20° C.	40′	9289.2	5184.5	20° C.
50′	6457.3	2903.1	T	50′	7719.7	3884.0	T	50′	9319.5	5210.3	T
97°	6476.2	2917.3	1.74	107°	7743.2	3902.9	2.08	117°	9349.9	5236.2	2.52
10′	6495.2	2931.6	E	10′	7766.8	3921.9	E	10′	9380.5	5262.3	E
20′	6514.3	2945.9	.809	20′	7790.5	3940.9	1.08	20′	9411.3	5288.6	1.46
30′	6533.4	2960.3		30′	7814.3	3960.1		30′	9442.2	5315.0	
40′	6552.6	2974.7		40′	7838.1	3979.4		40′	9473.2	5341.5	
50′	6571.9	2989.2		50′	7862.1	3998.7		50′	9504.4	5368.2	
98°	6591.2	3003.8		108°	7886.2	4018.2		118°	9535.7	5395.1	
10′	6610.6	3018.4		10′	7910.4	4037.8		10′	9567.2	5422.1	
20′	6630.1	3033.1	25° C.	20′	7934.6	4057.4	25° C.	20′	9598.9	5449.2	25° C.
30′	6649.6	3047.9	T	30′	7959.0	4077.2	T	30′	9630.7	5476.5	T
40′	6669.2	3062.8	2.18	40′	7983.5	4097.1	2.61	40′	9662.6	5504.0	3.16
50′	6688.8	3077.7	E	50′	8008.0	4117.0	E	50′	9694.7	5531.7	E
99°	6708.6	3092.7	1.02	109°	8032.7	4137.1	1.36	119°	9727.0	5559.4	1.83
10′	6728.4	3107.7		10′	8057.4	4157.3		10′	9759.4	5587.4	
20′	6748.2	3122.9		20′	8082.3	4177.5		20′	9792.0	5615.5	
30′	6768.1	3138.1		30′	8107.3	4197.9		30′	9824.8	5643.8	
40′	6788.1	3153.3		40′	8132.3	4218.4		40′	9857.7	5672.3	
50′	6808.2	3168.7		50′	8157.5	4239.0		50′	9890.8	5700.9	
100°	6828.3	3184.1	30° C.	110°	8182.8	4259.7	30° C.	120°	9924.0	5729.7	30° C.
10′	6848.5	3199.6	T	10′	8208.2	4280.5	T	10′	9957.5	5758.6	T
20′	6868.8	3215.1	2.62	20′	8233.7	4301.4	3.14	20′	9991.0	5787.7	3.81
30′	6889.2	3230.8	E	30′	8259.3	4322.4	E	30′	10025.0	5817.0	E
40′	6909.6	3246.5		40′	8285.0	4343.6		40′	10059.0	5846.5	
50′	6930.1	3262.3	1.22	50′	8310.8	4364.8	1.63	50′	10093.0	5876.1	2.20

T = R tan ½ I E = R exsec ½ I

Table X.

MIDDLE ORDINATES OF RAILS

Length of Rail (feet)

C ° ′	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch	C °	R Feet	30 Inch	28 Inch	26 Inch	24 Inch	22 Inch	20 Inch
0–20	17189	.08	.07	.06	.05	.04	.03	8	716.8	1.88	1.64	1.42	1.20	1.01	.84
0–40	8594	.16	.14	.12	.10	.08	.07	9	637.3	2.12	1.84	1.60	1.35	1.14	.94
1–0	5730	.24	.20	.18	.15	.13	.10	10	573.7	2.36	2.05	1.78	1.50	1.27	1.04
1–20	4297	.31	.27	.23	.20	.17	.13	11	521.7	2.59	2.26	1.95	1.65	1.39	1.15
1–40	3438	.39	.34	.29	.25	.21	.17	12	478.3	3.83	2.47	2.15	1.81	1.54	1.26
2–0	2865	.47	.41	.35	.30	.25	.20	13	441.7	3.05	2.66	2.30	1.96	1.66	1.36
2–20	2456	.55	.48	.41	.35	.29	.23	14	410.3	3.30	2.87	2.48	2.10	1.78	1.46
2–40	2149	.63	.55	.47	.40	.33	.27	15	383.1	3.54	3.08	2.68	2.26	1.91	1.57
3–0	1910	.71	.62	.53	.45	.38	.31	16	359.3	3.76	3.28	2.83	2.40	2.04	1.67
3–20	1719	.78	.68	.59	.50	.42	.35	17	338.3	4.00	3.48	3.02	2.57	2.16	1.78
3–40	1563	.86	.75	.65	.55	.46	.38	18	319.6	4.21	3.67	3.18	2.70	2.28	1.87
4–0	1433	.94	.82	.71	.60	.50	.42	19	302.9	4.45	3.89	3.36	2.86	2.41	1.98
4–20	1323	1.02	.89	.77	.65	.55	.45	20	287.9	4.70	4.09	3.55	3.00	2.54	2.09
4–40	1228	1.10	.96	.83	.70	.59	.48	22	262.0	5.16	4.44	3.84	3.30	2.80	2.29
5	1146	1.18	1.03	.89	.75	.63	.52	24	240.5	5.64	4.92	4.20	3.59	3.04	2.50
6	955.3	1.41	1.23	1.06	.90	.76	.62	26	222.3	6.07	5.29	4.58	3.88	3.29	2.70
7	819.0	1.65	1.44	1.24	1.05	.89	.73								

Table XI.

SHORT RADIUS CURVES

Radius Feet	Chord Feet	Central Angle	Deflection Angle	Deflection for 1 Foot
35	10	16-26	8-13	49.3
45	10	12-46	6-23	38.3
50	15	17-16	8-38	34.5
60	15	14-22	7-11	28.8
75	15	11-30	5-45	23.0
100	20	11-30	5-45	17.3
120	20	9-34	4-47	14.3
150	20	7-39	3-49	11.5
190	25	7-32	3-46	9.15
200	25	7-10	3-35	8.6
225	25	6-25	3-12	7.7
240	25	5-58	2-59	7.2
250	25	5-44	2-52	6.9
275	25	5-12	2-36	6.2
288	50	9-58	4-59	6.0
300	50	9-32	4-46	5.7
350	50	8-12	4-06	4.9
376	50	7-40	3-50	4.6
400	50	7-10	3-35	4.3
410	50	7-00	3-30	4.2

To find length of curve divide angle from P. C. to P. T. by central angle of chord and multiply by length of chord.

Table XII.

INCLINED DISTANCE OF 100 FT. REDUCED TO HORIZONTAL

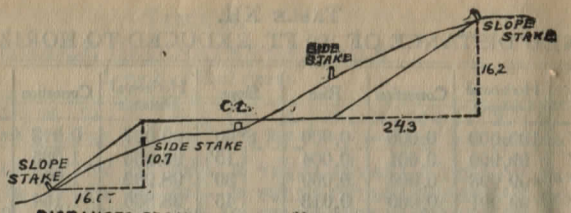
Slope	Horizontal Distance	Correction	Rise	Slope	Horizontal Distance	Correction	Rise
0°00′	100.000	0.000	0.000	8°00′	99.027	0.973	0.139
15′	99.999	0.001	0.004	15′	98.965	1.035	0.143
30′	99.996	0.004	0.009	30′	98.902	1.098	0.148
45′	99.991	0.009	0.013	45′	98.836	1.164	0.152
1 00	99.985	0.015	0.017	9 00	98.769	1.231	0.156
15	99.976	0.024	0.022	15	98.700	1.300	0.161
30	99.966	0.034	0.026	30	98.629	1.371	0.165
45	99.953	0.047	0.031	45	98.556	1.444	0.169
2 00	99.939	0.061	0.035	10 00	98.481	1.519	0.174
15	99.923	0.077	0.039	15	98.404	1.596	0.178
30	99.905	0.095	0.044	30	98.325	1.675	0.182
45	99.885	0.115	0.048	45	98.245	1.755	0.187
3 00	99.863	0.137	0.052	11 00	98.163	1.837	0.191
15	99.839	0.161	0.057	15	98.079	1.921	0.195
30	99.813	0.187	0.061	30	97.992	2.008	0.199
45	99.786	0.214	0.065	45	97.905	2.095	0.204
4 00	99.756	0.244	0.070	12 00	97.815	2.185	0.208
15	99.725	0.275	0.074	15	97.723	2.277	0.212
30	99.692	0.308	0.078	30	97.630	2.370	0.216
45	99.657	0.343	0.083	45	97.534	2.466	0.221
5 00	99.619	0.381	0.087	13 00	97.437	2.563	0.225
15	99.580	0.420	0.092	15	97.338	2.662	0.229
30	99.540	0.460	0.096	30	97.237	2.763	0.233
45	99.497	0.503	0.100	45	97.134	2.866	0.238
6 00	99.452	0.548	0.105	14 00	97.030	2.970	0.242
15	99.406	0.594	0.109	15	96.923	3.077	0.246
30	99.357	0.643	0.113	30	96.815	3.185	0.250
45	99.307	0.693	0.118	45	96.705	3.295	0.255
7 00	99.255	0.745	0.122	15 00	96.593	3.407	0.259
15	99.200	0.800	0.126	15	96.479	3.521	0.263
30	99.144	0.856	0.131	30	96.363	3.637	0.267
45	99.087	0.913	0.135	45	96.246	3.754	0.271

For each foot take one one-hundredth of each reading.

Table XIII.

MINUTES IN DECIMALS OF A DEGREE.

0 30″	.00833	10′ 30″	.17500	20′ 30″	.34167	30′ 10″	.50833	40′ 30″	.67500	50′ 10″	.84167
1 00	.01667	11 00	.18333	21 00	.35000	31 00	.51667	41 00	.68333	51 00	.85000
30	.02500	30	.19167	30	.35833	30	.52500	30	.69167	30	.85833
2 00	.03333	12 00	.20000	22 00	.36667	32 00	.53333	42 00	.70000	52 00	.86667
30	.04167	30	.20833	30	.37500	30	.54167	30	.70833	30	.87500
3 00	.05000	13 00	.21667	23 00	.38333	33 00	.55000	43 00	.71667	53 00	.88333
30	.05833	30	.22500	30	.39167	30	.55833	30	.72500	30	.89167
4 00	.06667	14 00	.23333	24 00	.40000	34 00	.56667	44 00	.73333	54 00	.90000
30	.07500	30	.24167	30	.40833	30	.57500	30	.74167	30	.90833
5 00	.08333	15 00	.25000	25 00	.41667	35 00	.58333	45 00	.75000	55 00	.91667
30	.09167	30	.25833	30	.42500	30	.59167	30	.75833	30	.92500
6 00	.10000	16 00	.26667	26 00	.43333	36 00	.60000	46 00	.76667	56 00	.93333
30	.10833	30	.27500	30	.44167	30	.60833	30	.77500	30	.94167
7 00	.11667	17 00	.28333	27 00	.45000	37 00	.61667	47 00	.78333	57 00	.95000
30	.12500	30	.29167	30	.45833	30	.62500	30	.79167	30	.95833
8 00	.13333	18 00	.30000	28 00	.46667	38 00	.63333	48 00	.80000	58 00	.96667
30	.14167	30	.30833	30	.47500	30	.64167	30	.80833	30	.97500
9 00	.15000	19 00	.31667	29 00	.48333	39 00	.65000	49 00	.81667	59 00	.98333
30	.15833	30	.32500	30	.49167	30	.65833	30	.82500	30	.99167
10 00	.16667	20 00	.33333	30 00	.50000	40 00	.66667	50 00	.83333	60 00	1.00000

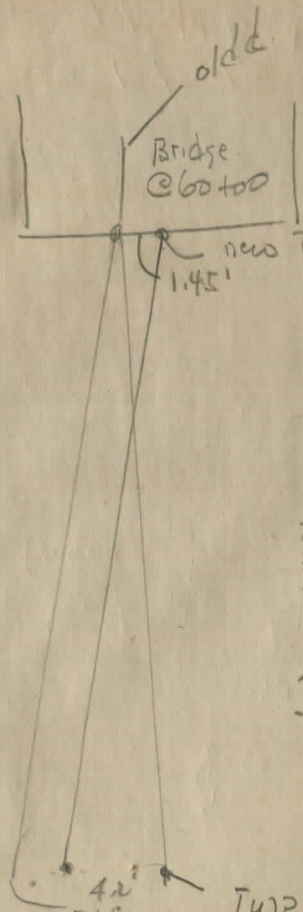


DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING.

SLOPE 1½ TO 1. ROADWAY OF ANY WIDTH.

	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0 00	0 15	0.30	0.45	0.60	0.75	0.90	1.05	1.20	1.35	0
1	1.50	1 65	1 80	1.95	2.10	2.25	2.40	2.55	2.70	2.85	1
2	3.00	3.15	3.30	3 45	3.60	3 75	3.90	4.05	4.20	4 35	2
3	4.50	4 65	4.80	4.95	5 10	5 25	5 40	5.55	5.70	5.85	3
4	6.00	6 15	6.30	6.45	6.60	6.75	6.90	7.05	7.20	7.35	4
5	7 50	7.65	7.80	7.95	8.10	8.25	8.40	8.55	8.70	8.85	5
6	9 00	9 15	9.30	9.45	9.60	9.75	9.90	10.05	10.20	10.35	6
7	10.50	10 65	10.80	10.95	11.10	11.25	11.40	11.55	11 70	11.85	7
8	12.00	12 15	12.30	12.45	12.60	12.75	12.90	13 05	13.20	13.35	8
9	13 50	13 65	13 80	13 95	14.10	14.25	14.40	14 55	14.70	14.85	9
10	15.00	15 15	15 30	15 45	15.60	15.75	15.90	16.05	16.20	16 35	10
11	16 50	16 65	16 80	16.95	17 10	17.25	17.40	17.55	17.70	17.85	11
12	18 00	18.15	18.30	18 45	18.60	18 75	18.90	19.05	19.20	19 35	12
13	19 50	19 65	19.80	19.95	20.10	20.25	20 40	20.55	20.70	20.85	13
14	21.00	21 15	21.30	21.45	21 60	21.75	21.90	22 05	22 20	22 35	14
15	22 50	22 65	22 80	22 95	23.10	23.25	23.40	23.55	23.70	23.85	15
16	24.00	24 15	24 30	24 45	24.60	24.75	24 90	25 05	25.20	25.35	16
17	25.50	25 65	25.80	25 95	26.10	26 25	26 40	26.55	26.70	26.85	17
18	27.00	27 15	27.30	27 45	27.60	27.75	27.90	28.05	28 20	28.35	18
19	28 50	28 65	28 80	28.95	29.10	29.25	29.40	29.55	29.70	29.85	19
20	30 00	30 15	30.30	30.45	30.60	30.75	30.90	31.05	31.20	31.35	20
21	31 50	31 65	31.80	31.95	32 10	32 25	32.40	32.55	32 70	32 85	21
22	33 00	33 15	33 30	33 45	33.60	33 75	33.90	34.05	34.20	34.35	22
23	34 50	34 65	34.80	34.95	35.10	35 25	35 40	35.55	35.70	35 85	23
24	36.00	36 15	36.30	36 45	36.60	36.75	36.90	37.05	37 20	37.35	24
25	37.50	37 65	37 80	37.95	38.10	38.25	38.40	38.55	38.70	38.85	25
26	39 00	39 15	39.30	39 45	39 60	39.75	39.90	40.05	40.20	40.35	26
27	40 50	40 65	40 80	40.95	41.10	41.25	41 40	41.55	41.70	41.85	27
28	42 00	42 15	42.30	42.45	42.60	42 75	42.90	43.05	43.20	43.35	28
29	43 50	43 65	43.80	43 95	44.10	44 25	44 40	44.55	44.70	44 85	29
30	45 00	45 15	45.30	45 45	45.60	45.75	45.90	46.05	46 20	46.35	30
31	46.50	46.65	46.80	46 95	47.10	47.25	47.40	47.55	47.70	47.85	31
32	48 00	48.15	48.30	48 45	48.60	48 75	48.90	49.05	49 20	49.35	32
33	49.50	49 65	49.80	49.95	50.10	50.25	50.40	50.55	50 70	50.85	33
34	51 00	51.15	51.30	51.45	51.60	51.75	51.90	52.05	52.20	52.35	34
35	52 50	52.65	52.80	52.95	53.10	53.25	53.40	53.55	53.70	53.85	35
36	54 00	54 15	54.30	54 45	54.60	54.75	54.90	55.05	55.20	55.35	36
37	55 50	55 65	55.80	55.95	56.10	56.25	56.40	56.55	56.70	56.85	37
38	57.00	57.15	57.30	57 45	57.60	57 75	57.90	58.05	58.20	58 35	38
39	58 50	58.65	58 80	58 95	59.10	59 25	59.40	59 55	59.70	59.85	39
40	60 00	60 15	60 30	60 45	60 60	60.75	60 90	61.05	61 20	61.35	40
41	61.50	61 65	61 80	61 95	62 10	62 25	62.40	62 55	62 70	62.85	41
42	63 00	63.15	63 30	63 45	63 60	63 75	63 90	64 05	64 20	64.35	42
43	64.50	64 65	64 80	64.95	65.10	65 25	65 40	65.55	65.70	65.85	43
44	66 00	66 15	66.30	66.45	66.60	66.75	66.90	67.05	67.20	67.35	44
45	67 50	67 65	67 80	67 95	68.10	68.25	68.40	68.55	68.70	68.85	45
46	69 00	69 15	69 30	69.45	69.60	69.75	69.90	70.05	70.20	70.35	46
47	70 50	70 65	70 80	70 95	71.10	71.25	71 40	71.55	71.70	71.85	47
48	72.00	72 15	72.30	72.45	72.60	72.75	72.90	73 05	73.20	73 35	48
49	73 50	73 65	73.80	73.95	74.10	74.25	74.40	74.55	74.70	74.85	49
50	75.00	75.15	75.30	75.45	75.60	75.75	75.90	76.05	76.20	76.35	50

Computed by L. Leland Locke.



6000 = 5.65

307.4 = 5.36 0.29 ③3.9
1262.8 = 4.46 1.19 ③3.0
2096.5 = 3.68 1.97 ③2.2
3000 = 2.82 2.82 ③1.4
3583.5 = 2.28 3.37 ③0.8
4116 = 1.77 3.88 ③0.3
4543 = 4.28 No.1
5003.4 = 4.71 No.5

16693.4
308.6
38 1.8

TABLE OF INCHES REDUCED TO DECIMALS OF A FOOT.

Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.	Ins.	Dec.
1/16	.0052	1 5/16	.1094	2 9/16	.2135	3 13/16	.3177	5 1/16	.4219	6 5/16	.5260	7 9/16	.6302	8 13/16	.7344	10 1/16	.8385	11 5/16	.9427
1/8	.0104	1 3/8	.1146	2 5/8	.2188	3 7/8	.3229	5 1/8	.4271	6 3/8	.5313	7 5/8	.6354	8 7/8	.7396	10 1/8	.8438	11 3/8	.9479
3/16	.0156	1 7/16	.1198	2 11/16	.2240	3 15/16	.3281	5 3/16	.4323	6 7/16	.5365	7 11/16	.6406	8 15/16	.7448	10 3/16	.8490	11 7/16	.9531
1/4	.0208	1 1/2	.1250	2 3/4	.2292	4—	.3333	5 1/4	.4375	6 1/2	.5417	7 3/4	.6458	9—	.7500	10 1/4	.8542	11 1/2	.9583
5/16	.0260	1 9/16	.1302	2 13/16	.2344	4 1/16	.3385	5 5/16	.4427	6 9/16	.5469	7 13/16	.6510	9 1/16	.7552	10 5/16	.8594	11 9/16	.9635
3/8	.0313	1 5/8	.1354	2 7/8	.2396	4 1/8	.3438	5 3/8	.4479	6 5/8	.5521	7 7/8	.6563	9 1/8	.7604	10 3/8	.8646	11 5/8	.9688
7/16	.0365	1 11/16	.1406	2 15/16	.2448	4 3/16	.3490	5 7/16	.4531	6 11/16	.5573	7 15/16	.6615	9 3/16	.7656	10 7/16	.8698	11 11/16	.9740
1/2	.0417	1 3/4	.1458	3—	.2500	4 1/4	.3542	5 1/2	.4583	6 3/4	.5625	8—	.6667	9 1/4	.7708	10 1/2	.8750	11 3/4	.9792
9/16	.0469	1 13/16	.1510	3 1/16	.2552	4 5/16	.3594	5 9/16	.4635	6 13/16	.5677	8 1/16	.6719	9 5/16	.7760	10 9/16	.8802	11 13/16	.9844
5/8	.0521	1 7/8	.1563	3 1/8	.2604	4 3/8	.3646	5 5/8	.4688	6 7/8	.5729	8 1/8	.6771	9 3/8	.7813	10 5/8	.8854	11 7/8	.9896
11/16	.0573	1 15/16	.1615	3 3/16	.2656	4 7/16	.3698	5 11/16	.4740	6 15/16	.5781	8 3/16	.6823	9 7/16	.7865	10 11/16	.8906	11 15/16	.9948
3/4	.0625	2—	.1667	3 1/4	.2708	4 1/2	.3750	5 3/4	.4792	7—	.5833	8 1/4	.6875	9 1/2	.7917	10 3/4	.8958		
13/16	.0677	2 1/16	.1719	3 5/16	.2760	4 9/16	.3802	5 13/16	.4844	7 1/16	.5885	8 5/16	.6927	9 9/16	.7969	10 13/16	.9010		
7/8	.0729	2 1/8	.1771	3 3/8	.2813	4 5/8	.3854	5 7/8	.4896	7 1/8	.5938	8 3/8	.6979	9 5/8	.8021	11—	.9063		
15/16	.0781	2 3/16	.1823	3 7/16	.2865	4 11/16	.3906	5 15/16	.4948	7 3/16	.5990	8 7/16	.7031	9 11/16	.8073	11 1/16	.9115		
1/16	.0833	2 1/4	.1875	3 1/2	.2917	4 3/4	.3958	6—	.5000	7 1/4	.6042	8 1/2	.7083	9 3/4	.8125	11 1/8	.9167		
1/8	.0885	2 5/16	.1927	3 9/16	.2969	4 13/16	.4010	6 1/16	.5052	7 5/16	.6094	8 9/16	.7135	9 13/16	.8177	11 3/16	.9219		
3/16	.0938	2 3/8	.1979	3 5/8	.3021	4 7/8	.4063	6 1/8	.5104	7 3/8	.6146	8 5/8	.7188	9 7/8	.8229	11 1/4	.9271		
1/4	.0990	2 7/16	.2031	3 11/16	.3073	4 15/16	.4115	6 3/16	.5156	7 7/16	.6198	8 11/16	.7240	9 15/16	.8281	11 5/16	.9323		
5/16	.1042	2 1/2	.2083	3 3/4	.3125	5—	.4167	6 1/4	.5208	7 1/2	.6250	8 3/4	.7292	10—	.8333	11 3/8	.9375		

B. K. ELLIOTT COMPANY, PITTSBURG, PA.
DRAWING MATERIALS AND SURVEYING INSTRUMENTS